THE WORLD'S BIGGEST SELLING ST MAGAZINE

ST FORMAT

ISSUE 78 ■ JANUARY 1996 ■ £4.25

17.50

THE COMPLETE HARDWARE GUIDE

INSIDE YOUR ST

WIN A JAGUAR!
See Page 35

1995 AND ALL THAT...

We reveal the year's best hardware and software

REVIEWED THIS MONTH:

TWIST 3 ● HP DESKJET 600 ● APEX INTRO ● OUTRIDER ● STARIO'S CHRISTMAS ● GENOCIDE ● B/STAT ● PLASMA BALL ● WORLD LEAGUE SOCCER ● CRAGHAVEN ● EMPEROR ● TAKE500 ● MUZAK PLAYER 2 ● RIP IT UP ● FALCON STOS EXTENSIONS ● MAGIC SPELLER ● AND MORE

JAGUAR™

The BEAST is back!

See page 30

7 GREAT PROGRAMS – SEE BACK COVER FOR DETAILS

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future
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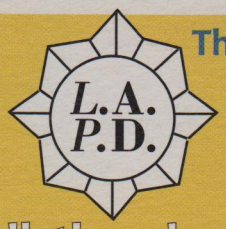
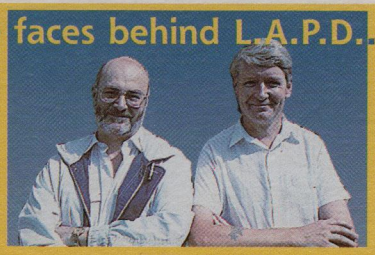
L.A.P.D.



The faces behind L.A.P.D...



Software at realistic prices

PD DISKS: • £1.50 each • Budget range PD Disks ONLY £1.00

Same day service, quality virus-free disks

Please add 50p P&P on orders under £5.00. Overseas customers (outside Europe) please add 50p per disk

ALL DISKS BELOW ARE ONLY £1.50 UNLESS OTHERWISE STATED

games

ARCADE

G.417 STAR VOYAGE: Intergalactic action – requires 2 joysticks (Ex Star Trek - TNG). (2 disks/£3.00, 1Mb)
G.413 COMBAT: Fast action military shoot 'em up in style of Operation Wolf
G.410 PACMAN ON E: One or two player classic 'PacMan' with sampled music
G.405 ULTIMATE ARENA: Beat 'em up in the style of 'Mortal Kombat' (STE, 1Mb, S/W).
G.403 SQUARE OFF: The ultimate tumbling block 'Tetris' game (STE, 1Mb) (2 disks/£3.00).
G.398 ASTEROIDIA (STE): Classic asteroid blasting action – order G399 for STFM version (1Mb, S/W).
G.400 FRANTICK (STE): Superb fast action kinetic combat simulator – order G401 for STFM (1Mb) (2 disks/£3.00).
G.247 MEGAPEDE: The classic blast the caterpillar 'Centipede' game (1Mb).
G.395 DYNABUSTER: Bomb laying and dodging arcade game (STE, 1Mb).
G.366 DAVE MUNSIE GAMES: 9 games from the master programmer, including Frogger (1Mb).
G.355 WING LORD: Aerial duelling game in the style of the classic 'Joust'.
G.380 STARBALL: Pinball game - arguably the best PD game on the ST!
G.381 MAX: Help Max find his girlfriend. A 'cute' arcade platform game (1Mb).
G.333 SUPER PSYCHO KART: High speed platform game to rescue piglets (1Mb).
G.286 ROCKFALL - SPECIAL EDITION: Tunnelling/diamond collecting puzzle game.
G.281 PSYCHO PIG: Platform shoot 'em up with Rambo-esque pig. (2 disks/£3.00).
G.279 OPERATION GARFIELD: Frantic 'Operation Wolf' type shoot 'em up action. (STE).
G.80 TETRIS & PILE UP: Two very good versions of the 'Tetris' arcade game.
G.171 HACMAN II: 1 megabyte version of PacMan, 100 new levels!
G.110 LLAMATRON: 100 levels of fast arcade action with wicked sound FX.
G.201 BLAT!: 'Tetris' style three in a row, falling blocks with many added features.

FANTASY/ROLE-PLAY

G.425 ANORAKS OF DOOM: First person view fantasy role-playing game. ***NEW*** (2 disks/£3.00)
G416 DANGIMERE: Detailed fantasy role-playing game. (1Mb, 2 disks/£3.00)
G.412 NISHIRAN: Classy sci-fi, first-person view role-playing game. (1Mb) (2 disks/£3.00).
G.431 REALMS OF REALITY: First-person view dungeon exploration and monster-bash.
G.351 TOWERS: First-person view role-playing fantasy adventure game (1Mb) (2 disks/£3.00).
G.308 WALLS OF ILLUSION: The ultimate 'Dungeonmaster' clone with English instructions (1Mb).
G.426 WYRD WAYS: Magical combat in a maze of sliding walls (1Mb, S/W).
G.5 MORIA: A complex fantasy D&D based role-play game. (1Mb).
G.370 MINDMELT: Fantasy adventure with an overhead view.
G.288 DARKLYTE: 'Space Crusade' type droids wargame.
G.262 ALIENS!: Space Marines v Aliens strategy combat game.
G.115 MYSTIC WELL: Complete 'Dungeonmaster' style adventure game.

PUZZLES

G.404 MEMORY RECALL: Challenging memory test with digi pics & sound. (1Mb)
G.387 SPACESWEEPER: A challenging 'Minesweeper' game in three dimensions!
G.315 SKULLS: Addictive up to date reworking of Landmines/Minefield (1Mb STE).
G.311 JIGSAW: A computerised jigsaw puzzle (1Mb).
G.269 QUIZMASTER: Multi-choice answer general knowledge quiz (STE).

ADVENTURES

G.411 ROBOT REVOLT: A sci-fi text adventure. ***NEW***
G.394 THE SECRET PARK: A text adventure with graphics for children.
G.225 CAILYNVORN: D&D type fantasy adventure set on a far earth-like planet.
G.321 INVESTIGATION: Graphic adventure in the style of Sierra On-Line. (2 disks/£3.00).
G.200 ANARCHY ACADEMY: 3D graphic adventure to blow up the school!
G.140 A NIGHT ON THE TOWN: An adventure with the opportunity to meet the girl of your dreams and ...well, the rest is up to you.
G.222 GRANDAD AND THE QUEST...: 3D graphics adventure by Ian Scott. Shareware (1Mb).
G.303 GRANDAD AND THE SEARCH FOR THE SANDWICHES: Graphic adventure (1Mb) (2 disks/£3.00).
G.91 QUEST FOR THE HOLY GRAIL: Pythonesque madcap humour.
G.202 UNNKULIAN UNDERWORLD: Highly rated large scale text fantasy adventure.

STRATEGY & OTHERS

G.432 MIDI-WIZ: Fantasy war game with similarities to 'Civilisation'. ***NEW***. (1Mb, S/W).
G.131 STAR TREK - THE GAME: Defeat the Klingon threat to the galaxy (1Mb).
G.427 AIR TRAFFIC CONTROLLER: Control comings and goings at a busy international airport.
G.386 STAR TREK - KLINGON WARS: A Starship Enterprise battle simulation (1Mb).
G.431 REALMS OF REALITY: 'Dungeonmaster' type exploration and adventure. (1Mb).
G.421 WAR: A wargame construction kit. (1Mb).
G.390 INTERNATIONAL MANAGER: European Nations/World Cup management game.
G.391 ANCIENT GAME OF GO: Two computer versions of the Oriental game (Gnugo, Amigo).
G.344 CHESS-MATE: A chess/draughts game analysis tool.
G.332 CAESAR: Strategy game set around the Mediterranean in 200BC (S/W).
G.330 GNU CHESS: French chess playing program for all levels.
G.388 STRATAGEM: Two player strategy world war game. (2 disks/£3.00).
G.329 PEGASUS: Space strategy game. Seek out and colonise planets. (1Mb) (2 disks/£3.00).
G.287 THE COARSE ANGLER: Angling simulation game (1Mb).
G.237 CHAOS: Madcap game of battling wizards by Martin Brownlow (1Mb or 0.5Mb).
G.324 IMPERIAL CONQUEST: Complex ancient Mediterranean game of conquest (S/W).
G.325 SOCCER MANAGEMENT: A complex simulation of soccer management (S/W).
G.217 THE MAZE: 3D adventure game loosely based on 'The Crystal Maze'.
G.173 PENGUINS: Move your penguins around the screen 'Lemming' fashion.
G.10 VEGAS: Roulette, poker, blackjack and slots... without the Nevada sand!

budgie uk

BU.119 FOOTBALL TACTICIAN 1: The original £19.95 Premier League version of the soccer management game!
BU.111 INTERNATIONAL CRICKET II: Animated 3D game (1Mb).
BU.50 SPACE INVADERS: Classic arcade action by Robert Leong.
BU.90 MATCH IT: Possibly the most addictive game ever devised.
BU.89 HORSE RACING SIM: Quality sim from the sale ring to the track.
BU.30 QUEST FOR GALAXIA: The "Galaxians" return to your ST.
BU.70 PACMAN ST: The definitive version by Robert Leong.
BU.71 DARK WARS: Role-playing adventure with a 3D view.

ST FORMAT TOP 10 GAMES - ONLY £12.00

A special bargain bundle of the top 10 PD and shareware games as selected by ST Format magazine in issue 75. They are 4-7-11, Colortris, Drachen, Grandad and the Quest for the Holey Vest, Grandad and the Search for the Sandwiches, Llamatron, Ozone, Starball, Stello, Super Breakout and Towers.

dave munsie games

Munsie Games, some of the most playable and fun-filled games on the Atari, can now be registered via L.A.P.D.! Send us the code number from your game and we'll send you the pass-code giving access to extra lives, extra levels, etc.

Cost is just £6.00 per title.

Games that can be registered so far are Asteroidia, Frantic and Square Off.

All registrations receive a FREE copy of Dave's SEA WOLF game!

Pre-registered versions of these incredible games may also be purchased as follows:

L119 ASTEROIDIA: The classic game 'Asteroids' with 3D rendered asteroids. (STE, £6.00).
L120 ASTEROIDIA: The STFM version of the above. (STFM, £7.00).
L121 FRANTICK: Fast action kinetic combat simulator Frantick. (STE, £7.50).
L122 FRANTICK: The STFM version of the above. (STFM,£7.50).
L123 SQUARE OFF: Falling block puzzle game in the style of the classic 'Tetris'. (£7.50).

FREE MUNSIE DISK'O'ZINE

For a free copy of Dave Munsie's magazine disk with information and screen shots about his games just send a blank disk and an s.s.a.e. to the L.A.P.D. at the address above.

L.A.P.D. Licenceware Games

Possibly the best licenceware range on the ST

Licenceware means that for every copy you buy the author receives a royalty payment from L.A.P.D. This ensures that the authors receive suitable recompense for their hard work thus encouraging them to produce even more excellent programs for the Atari range of computers. It saves you all the fuss and hassle of shareware payments. Licenceware programs are complete and ready to run, there are no hidden fees!

strategy games

L.128 BLUDGEON V.2 (1Mb, £3.00): Computer moderated fantasy combat system for one or more players. Includes two free adventure scenarios. **EXTRA!! First fifty orders will receive FREE printed manuals!! *NEW***
L.129 BLUDGEON ADVENTURES #1 (£3.00): Six additional solo adventures for the above BLUDGEON game. ***NEW***
L.124 THE SANDS OF MARS (£3.00): Govern a Martian mining colony.
L.132 SEA WAR (1Mb, £2.50): Hi-tech version of 'Battleships'. Design and fight your own fleet. ***NEW***
L.105 CONQUEST 2 (1Mb, £3.00): Rule over a medieval kingdom's economy and armies.
L.104 WAR OVER THE REICH (£3.00): Plan and execute a campaign of WWII raids against twelve German cities.
L.98 WORLD AT WAR (£3.00): A game of economic and military strategy on a grand scale for one to seven players.
L.22 GRAND PRIX MANAGER (£2.50): Simulation game of running a Formula One Grand Prix team.
L.79 DARKLYTE II (1Mb, £3.00): A sci-fi space/strategy game in which you must destroy the Darklyte forces. Reminiscent of the 'Space Crusade' game.
L.118 THEY SOLD SEVERAL (£3.00): by Ben Weston. The five games on one disk: THE UNMAGNIFICENT 15, a simple wild west shoot 'em up game. CLAN, a Hamurabi ruling type game. QUEST KNIGHT, A fantasy game. LOGIC PROBLEMS, five challenging electronic puzzles. LOGIC PROBLEMS II, more of the same.
L.42 OUTWORLD (£2.50): An arcade/strategy game in which you take control of a space colony.
L.53 HOT DOG (£2.50): A game of greyhound racing for one to nine players.
L.59 ARTHUR OF THE BRITONS (1Mb, £3.00): A strategy game with arcade sequences.
L.60 CONQUEST (1Mb, £3.00): A 'God' game in which your task is simply to survive for one year.

arcade games

L.130 DESERT HAWK (1Mb, £3.00): Control a Black Hawk helicopter through different missions.
L.93 PROJECT PURIFY (£3.00): Attempt to clear twenty sectors of space debris 'Asteroids' style.
L.87 STORM 94 (1Mb, STE, £3.00): Arcade action clearing aliens from a stricken space-freighter.
L.91 STORM 94 (1Mb, STFM, £3.00) : As L87 above but for the STFM.
L.86 FLUFFIES (1Mb, £3.00): A platform game across many levels as you guide a blue fluffy creature in an attempt to rescue his girlfriend.
L.80 MUNCHKIN (£2.50): The perpetually popular Pacman pastime!
L.116 STREETS (£3.00): Drive your motorcar around the streets collecting diamonds and blasting.
L.117 FISH TANK (£3.00): A game for younger players who must find food for their fish without getting eaten.
L.70 CHRONIC INVADERS (£2.50): The 'Space Invaders' return in this reworking of the all time classic computer game.
L.61 3D ASTEROIDS (1Mb, £2.50): Based on the classic 'Asteroids' game - but in 3D!

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e-mail: Clive@lapd.demon.co.uk or Leigh@lapd2.demon.co.uk

24 hour despatch on all orders No waiting around for disks to arrive!!

adventure & role-playing games

L.131 WANDERING SCIENCE (£2.50): Solve the puzzles on an alien vessel. A graphic adventure.
L.125 PATHS OF GLORY (£3.00): A sword and sorcery role-playing game.
L.115 DEMON II (1Mb, £3.00): A fantasy adventure game with an overhead view and detailed point and click interface.
L.114 TIME MACHINE (£3.00): A classy text based adventure with over 100 locations and over 40 graphic screens.
L.112 CRAGHAVEN (£2.50): High adventure in a fantasy land.
L.97 STONE COLD SOBER (£4.00): A traditional adventure game but with a point and click interface.
L.69 BIO-HAZARD (1Mb, £3.00): A first person perspective game to clear a space freighter of alien creatures.
L.21 DEAD OR ALIVE (£3.00): A large, complex and humorous text adventure game.
L.31 THE CURSE OF AZRIEL (2 disks, £4.00): A graphic fantasy role-playing/trading game. (Now FALCON compatible!).
L.41 MURDER ON THE ORION EXPRESS (£3.00): A murder mystery game with an almost infinite variety of solutions.
L.50 DEMON (£3.00): Trapped in a stone cell, your first task is to escape before the resident demon gets back. 3D view.

puzzles

L.110 QUICK FLIP (£3.00): A mind-bending tile flipping game.
L.106 CRAZY LETTERS (1Mb, £3.00): A word search game to find a seven letter word hidden behind a grid of squares.
L.102 DCS COMPILATION #4 (£3.00): On this disk are: BRAIN DAMAGE, test your brain to the limit. SHAPES, make shapes from 16 different pieces. LINK, form a chain across the screen. QUIZICAL, multi-choice question and answer game.
L.101 DCS COMPILATION #3 (£3.00): On this disk are: OUTRAGEOUS FORTUNE, a collection of logic and maths challenges. MATCH MAKER 2, match symbols on hidden cards. FRAME OF MIND, a gambling game. CRYPTOGRAM, based loosely on the TV program 'Countdown'.
L.100 DCS COMPILATION #2 (£3.00): On this disk are: QUEST FOR KNOWLEDGE (1Mb), seek out 12 hidden icons from mazes. REBOUND, a bat and ball game. GALACTIC FRUITBOWL, a combination of the fruit machine and the trivia quiz. GREY MATTER, a word game.
L.99 DCS COMPILATION #1 (£3.00): On this disk are: ACECHASE, a gambling program. THE WIZ, a fun program comprised of ten tests. MINDLOCK, a quiz program. MATCH MAKER, match up hidden symbols.
L.96 TILES IN SPACE (£3.00): A computer version of the sliding tile puzzle game.
L.94 GRID MANIA (£3.00): A word search game for 1 or 2 players.
L.92 BAMBOOZLE (£3.00): A puzzle game where you must turn all the symbols on a 25 square grid to higher scoring ones.
L.85 ZUFFERS (£3.00): A puzzle game where you must rescue microsocopic creatures.
L.84 WORD WIZARD (£3.00): A one or two player word guessing game with different levels of difficulty.
L.83 ZIGGY (£3.00): A puzzle game of turning globes.
L.75 FREAKED OUT (£3.00): A joystick controlled puzzle game.
L.74 NICE BYTES MEGA PACK #1 (£3.00): On this disk: ATOMOMIX, place atoms of varying energies onto a grid. PURE LOGIC, a game based on Boolean logic. REGA, a tile flipping game on a 5 x 5 grid. LOGICA, a three phase logic/puzzle game.
L.66 HEARTBREAK (£3.00): An infuriating and highly addictive puzzle game played on a 7 x 7 grid.
L.11 PI SQUARED (£2.50): A puzzle game. Convert all the symbols to Pi.
L.14 DICEY (£2.50): A challenging dice game in the style of the classic 'Yahtzee'.
L.40 GRIDWORD (£2.50): A word game in which you attempt to make the longest word possible.
L.52 ENERGETIX (£3.00): A puzzle game that challenges you to find those exact procedures to start a nuclear reactor.
L.58 NICE BYTES #1 (£2.50): On this disk: GRIDWORD: A word game for up to 4. REGA: A tile-flipping strategy game.

art & graphics

A.99 MINIPICS II: All resolution picture converter and cataloguer (1Mb).
L.77 AUTO-STEREOGRAM: Create your own 3D 'Magic Eye' pictures. (1Mb) (£3.00).
A.95 VISUAL ILLUSIONS: A collection of 24 'Magic Eye' 3D pictures.
A.98 STEREOGRAM ANIMATIONS: Now see 'Magic Eye' pictures move!
A.36 KOZMIC 4: Complete version of the stunning psychedelic pattern creator.
A.1 ANI ST: Commercial quality animation program (once cost £60.00 to buy!).
A.84 GEMVIEW: Load, view, convert just about any picture format (1Mb).
A.45 CRACK ART: Demo version of the excellent German art program.
A.75 POLYFILM by Martin Brownlow. Make films from multiple 3D polygon objects.
A.44 FANTASY SLIDESHOW: Spectrum 512 pictures on fantasy theme (over 16's only).

clip art

A.106 CHRISTMAS CLIP ART (3 disks/£4.50): Over 150 images in PCX or IMG. (Please state which format).
A.103 OFFICE CLIP ART 33: IMG or PCX images of office related items. (Please state which format).
A.100 ANIMALS CLIP ART (5 disks/£7.50): Over 170 IMG or PCX images of animals. (Please state which format).
A.101 ASTROLOGY CLIP ART (3 disks/£4.50): 36 IMG or PCX images of zodiac signs. (Please state which format).
A.102 SPACE CLIP ART: 38 images of the final frontier in PCX or IMG format (please state which format).
L.26, L.27, L.28 TYPE WRITE CLIP ART: 4 disk sets of quality clip art in IMG format. (£10.00 per set).

music

S.4 YAMAHA PSS: Patch editor and facility to print tablature music.
S.144 EKSEQ 1: A 100 track, 240ppqn sequencer with many features.
S.145 OPTRONIX MUZAK: Rip and play music from other programs.
S.8 NOISETRACKER: Soundtracker .MOD player with eight starter tunes.
S.7 ACCOMPANIAST: 16 Voice Henry Cosh sequencer (full instructions on disk).
S.19 ALCHIMIE JR: Impressive Swiss multi-window, multi-task sequencer (1Mb).

utilities

U.80 ZORG: A 'Disk Doctor' type organiser.
U.77 THING: Alternative desktop (1Mb).
L.111 SUPER HACKER: Replace a picture in almost any game or demo with your own! (£3.00).
U.67 ST TOOLS: An exhaustive collection of Atari ST utilities.
U.53 TERADESK V1.36: Replacement desktop for the ST/STE (1Mb).
U.20 FASTCOPY 3: Excellent disk copier for cover disks.
U.48 PREMIER PACKERS: 13 of the best program packers, plus a de-packer.
U.42 PICTURE HUNTER: Rips picture screens from other programs.
U.66 BEFORE DAWN: Animated screen saver that will use your own animations.
U.47 PROBE ST: Handy utility. Grabs music/graphics, disk/memory editor, etc.
U.52 VAULT & TURTLE: Fast hard disk back-up utilities.

ST FORMAT PRODUCTIVITY PACK

(TOP 40 UTILITIES) FOR £25.00

A special bargain pack of the top 40 PD and shareware programs (excluding games) as selected by ST Format magazine in issue 75. The programs are: Atomik 3.6, Autosort, Cardfile, Chameleon, Compact Office Manager, Crack Art, DB Master, Easy Text, Elf Backup, ESS Code, Everest, Fast Copy 3, GEM Spool, GEM View, Hypergem, Idealist, Kivi Qwk, LHArc, Marcel, Magic Story Book, Mouse-ka-Mania, Movie Master, Octalyser, Opus, POV Ray Trace, ProCalc, Revenge Document Displayer, Sagrotan, Second ST Manual, Selectric, Soundlab, SpiritEd, ST Diary, Superboot, Sweet 16, Teddy Term, Teradesk, Tom Shell, Turbo 407 and X Control.

miscellaneous

M.189 NATIONAL LOTTERY SIMULATOR: The fun way to pick your numbers. (1Mb, 2 disks/£3.00).
M.177 LOTTERY COMPANION: Valued statistical assistance with your lottery entries.
M.183 HOUSE EXPENSE MANAGER: Daily household expense management program.
L.103 LEXICON: The ideal program for word game fanatics. Solve crosswords, anagrams etc (£3.00).
L.111 SUPER-HACKER: Put your own picture into demos, games etc. (£3.00)
M.146 AWARD MAKER: Design and print awards certificates.
M.155 ROUTE FINDER: Route finding program for England, Wales and Scotland.
M.161 THE GARDENER: A special database for gardening enthusiasts.
M.175 FISHERMAN'S DATABASE: The ultimate record program for the keen angler.
M.19 AIR WARRIOR: Flight sim with World War II aircraft.
L.17 ADDRESS BOOK: Neat and easy to use database for names and addresses (£2.50).
L.18 CIRCUIT: Easy to use electrical circuit diagram producing program (£2.50).
M.93 STITCH MATRIX: Pattern making program for knitting machines.
M.77 THE BIBLE: King James authorised version (3 disks/£4.50).
M.76 FORM-FINDER: Proven horse race analysis and prediction program.
M.81 NEWSDISK: Construct your own newsletters and magazine disks.
M.100 GERMAN TRANSLATORS: Three programs to translate German text to English.
M.26 GENEALOGY: Two programs for the family historians to trace their forebears.
M.5 YOUR SECOND ATARI ST MANUAL: Text files to supplement the official manual.
M.17 WORD PUZZLE: Stuck with word games? Then this disk may help.
M.30 EXTRA WORD LIST: 70,000 extra words to use with disk M17.
M.190 YALE STAR CATALOGUE & STARCHART: Programs for the serious astronomer.
M.111 NORTHERN & EQUATORIAL STAR ATLAS: Superb serious astronomy program S/W.
M.1 PLANETARIUM: Excellent, easy to use, astronomy program.
M.8 ASTRONOMY & SKYWATCH: Programs for the technically minded sky watcher.
M.123 THE BIBLE: Complete King James, old and new testaments. (3 disks/£4.50)
M.176 FUSCHIAS DATABASE for the keen specialist gardener (or breeder of anything).
L. 89 GOLF: for the golfing sportsperson. (£3.00)

programming

F.53 STOSTESTERONE: A magazine disk devoted to programming STOS on the STE (issues 1 & 2 available). ***NEW***
P.53 IMAGINARY WORLD: Easy to use language to write your own role-play adventures.
P.44 GFA V.2: Full version of language with tutorial & compiler! (N.B this disk is not PD - L.A.P.D. have permission to distribute it.)
L.68 SPRITE WORKS: New commands for games writers using GFA V3+ (2 disks/£7.00).
DSP.1 SOZOBON C: A complete C compiler with documentation.
P.24 MENU-MAKER: Make your own menus with music, sprite and scrolling message.
P.33 ZX SPECTRUM EMULATOR: Emulate the old Speccy on your ST/STE (1Mb).
P.17 68000 PROGRAMMING COURSE: 10 'How to do it' document files.
P.19 GFA EXPERT: Massive text file and help routines for GFA-Basic 3.0.
P.16 C ADVENTURE TOOL KIT: Write professional quality adventures in C.

business

M.182 ST DIARY: A computer diary for the busy executive.
W.21 MARCEL: Super word processor with built in spell checker.
M.106 ACCOUNT-ABILITY: Fully featured accounts program. 10 accounts, 2,000 transactions!
M.148 INVOICE MASTER: Excellent invoicing system for small businesses.
M.13 OPUS 2000: A superb spreadsheet program (1Mb).
M.83 INVENTORY PRO: A stock control system.
U.23 DOUBLE SENTRY: Impressive accounts package for the small company (no VAT).
U.33 FAST BASE: A powerful and flexible database.
W.3 FIRST WORD: Word processor that set the standard for others to follow.
W.24 GDOS FONTS: A large assortment of fonts. (2 disks/£3.00)

educational

M.188 G.C.S.E MATHS & CHEMISTRY TUTOR: Two study aid programs.
M.187 TYPING TUTOR: Several courses to improve your skills.
L.20 SUPER SPELL: Teaching games for the 4 to 9 year old (£2.50).
L.37 SUPER FUN: More teaching games for the 4 to 9 year old (£2.50).
G.266 WITCHES, MICE & FAIRY TALES: Games for younger users.
G.83 NOAH'S ARK: Collect the animals, two by two - addictive for adults too!
M.95 ABOUT THE HOUSE: Excellent collection of programs for young children.
M.28 KIDZ EDUCATIONAL: Alphabet, Maths Test, Numerical-Go-Round & Number Maze.
M.37 KIDZ DISK #1: Colouring Book, Spell Pic, Word Pic and Flash Card.
M.42 KIDZ DISK #2: Dot to Dot, Keyboard Capers & Matching.
M.67 BODY SHOP: Graphic quiz-type human anatomy tutor.
M.104 SOLAR SYSTEM GEOGRAPHY: Effects of the sun & moon on tides, seasons, etc.
M.16 KIDZ COMPILATION: Kid Graph, Grid, Music, Notes, Piano, Publisher, sketch and story.. all on one disk!
PRO.27 EARLY LEARNING MATHS 2: by Philip Rankin for 9-12 years.
L.01 ROBOT MATHS: Maths tutor for children aged 6+ (£2.95).
L.02 MOON LETTERS: Spelling game for ages 5+ (£2.95).
L.04 ROBOT WORDS: Hangman in a modern format (£2.95).
L.08 ALL BLOCKED UP: Mathematical puzzles for the young (£2.95).
L.10 DROP DOWN WORDS: Spelling/memory game for youngsters (£2.95).
L.12 MATHS FUN: Maths for children 4 to 7 years (£2.95).
M.20 G.C.S.E. STUDY AIDS: Help with Algebra, Trigonometry and Geometry.
M.153 WORLD WAR II: Home front study pack for Sec. school work (3 disks/£4.50).
M.7 HISTORY FILE: Investigate a historical murder in Scotland (3 disks/£4.50).
M.86 DEATH OF A PRESIDENT: Investigate the Kennedy assassination (3 disks/£4.50).
M.114 FRANGLAIS 3 & 4: French language tutor programs.
M.123 C.I.A. WORLD FACTBOOK: Facts and figures on countries (4 disks/£6.00).
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CONTENTS

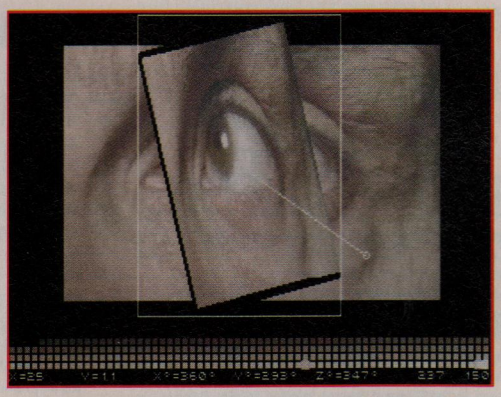
ISSUE 78 ■ JAN 1996

ST FORMAT

REVIEWS

24 TWIST 3
After what seems like an eternity, *Twist 3* is finally here, but was it worth the wait?

26 HEWLETT PACKARD DESKJET 600
HP's new baby gives superb printouts, and for a few quid more you can output your pages in colour.



Could *APEX Intro* turn out to be an even better buy than *APEX Media*? Turn to page 27 to find out.

27 APEX INTRO
At just under £40, this new cut-down version of *APEX Media* is now within everyone's budget.

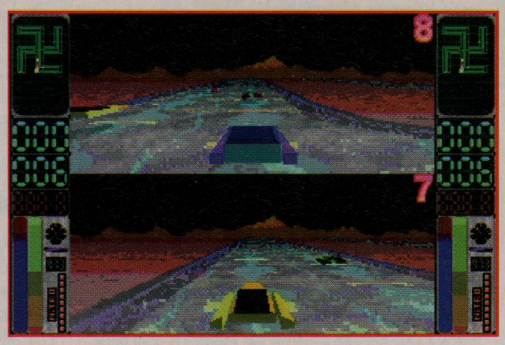
28 OUTRIDER
Take on three evil empires in this space-bound strategy game for up to three players.

29 STARIO'S CHRISTMAS
Prepare to take a running jump as we catch up with STario in this seasonal platformer.

STario leaps and bounds his way through a winter wonderland in this latest release from the boys at Top Byte.

REGULARS

6 COVER DISK
Get to grips with the *WWW Access Pack*, blow everything away in *Killing Time* and groan at the cheesy picture of your host, Nick Peers.



Find out about the sequel to the fabulous French Falcon game *Moon Speeder* in this month's news section.

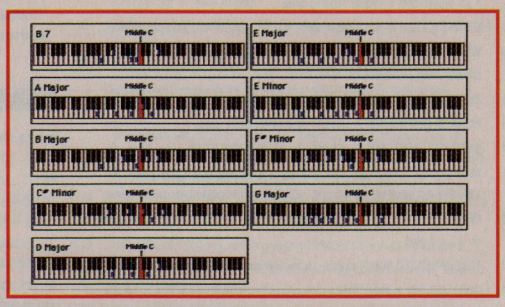
11 NEWS
Ease 4 is on its way, and Virtuality pulls out of the Jaguar Virtual Reality headset deal – read all about it in this month's news section.

44 PD & SHAREWARE
The best things in life are free, or nearly free. Andy Curtis checks out the latest low-cost software.

48 ST ANSWERS
Frank Charlton steps into Clive Parker's shoes to bring succour and relief to suffering ST owners everywhere. What a guy!

58 THE SCORE
This month, discover how to create natural-sounding guitar chords on your keyboard with resident musician Andy Curtis.

You'll be over the moon with our selection of PD and shareware.



Well, that's six more chords than Status Quo ever used. This month The Score reveals how to get natural-sounding guitar chords on your synth.

66 READER ADS

67 ST DIRECTORY

68 MAIL ORDER

69 BACK ISSUES

70 GAMESBUSTERS
Realms of Reality maps, *The Ultimate Arena* special moves, *Alien Thing's* level codes and more.

72 FEEDBACK
Laughter and tears in the company of editor Karen Levell, plus the results of all the recent competitions.

74 NEXT MONTH
Welcome to the prediction zone.

ST FORMAT
ABC Jan – Jun 1995
21,411
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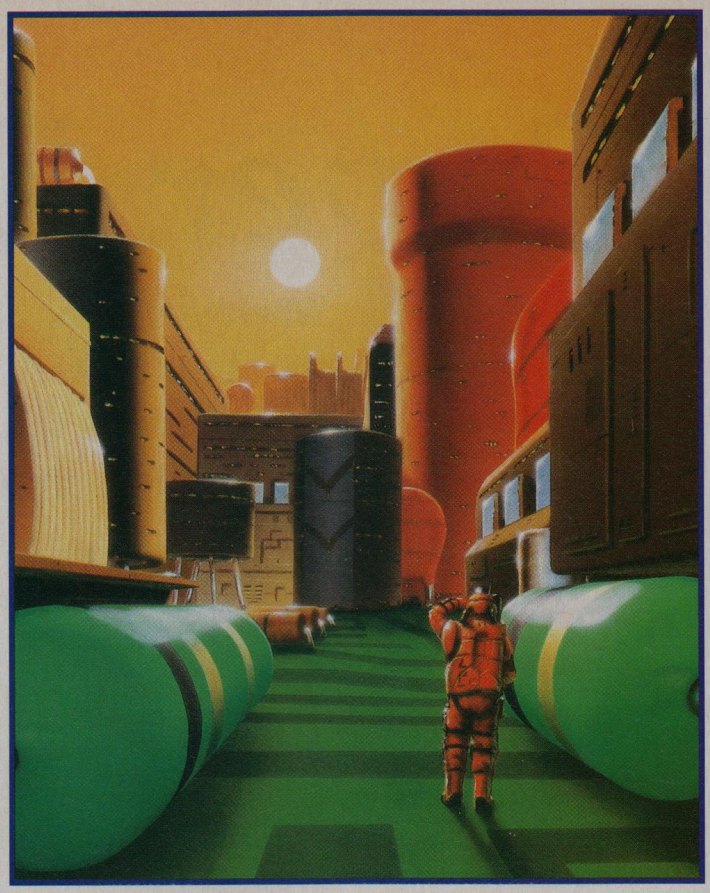
THE COMPLETE HARDWARE GUIDE

INSIDE YOUR ST



15 Explore the secret world of your ST's innards with this fully illustrated, nine-page guide to internal hardware.

FEATURES

9 SPECIAL OFFER
Now you can get the spectacular *Loom* and *The Secret of Monkey Island* for just £9.99 each.

15 INSIDE YOUR ST
We take you through your ST's internal hardware with this fully illustrated, nine-page guide.

30 THE JAGUAR PAST PRESENT AND FUTURE
After a landslide vote in favour of Jag coverage, we take a look at the console's performance so far.

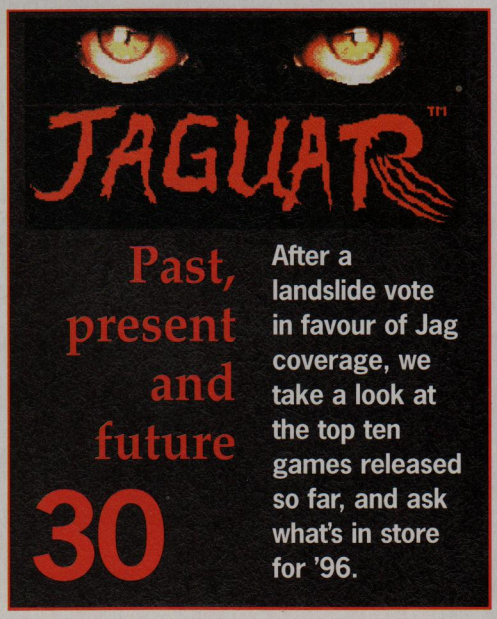
36 1995 AND ALL THAT...
We take a look at the best software and hardware of the last 12 months, and reveal the winners of the 1995 Reader Awards.

56 HTML CODING MADE EASY
The first part of a new series in which we show you how to create your own World Wide Web pages.

63 PROJECT DSP
This month: the penultimate part of Paul Hill's comprehensive coding series.

1995 AND ALL THAT...

36 We take a look at the best software and hardware of the last year, and reveal the winners of the 1995 Reader Awards.

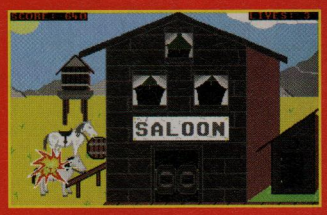


Past, present and future **30** After a landslide vote in favour of Jag coverage, we take a look at the top ten games released so far, and ask what's in store for '96.

COVER DISK 78

THIS MONTH...

WWW ACCESS PACK: This compilation of programs contains all the software you need to access the World Wide Web, and the Internet generally.
Uncompressed size: 507K



KILLING TIME: Travel through time blowing away anything that gets in your way. Fast, furious and ultra violent. Great stuff.
Uncompressed size: 270K

MENUINFO 2.41: This discreet application enables you to keep an eye on your system data.
Uncompressed size: 65K

ST TOOLS: Make sure your floppy and hard disks stay in tip-top condition with this powerful utility.
Uncompressed size: 273K

PEN PAL 1.2: This demo of Mountain Software's text editor is both powerful and easy to use.
Uncompressed size: 51K

BLINK 3.0: Now you can redecorate your desktop with this superb suite of utilities.
Uncompressed size: 67K

GOOFFY: Used as an Accessory, *Gooffy* enables you to print in the background while you get on with something else.
Uncompressed size: 30K

DSP FILES: Example files and utilities to accompany the latest installment of our DSP series.
Uncompressed size: 23K

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Printed by TPL, nr Kidderminster, Worcestershire
Circulation Manager Pete Walker ☎ 01225 442244
Assistant Publisher Alison 'Kevin Costner' Morton
Publisher Simon 'Young Audrey Hepburn' Stansfield
Managing Director Greg 'The Missus' Ingham
Chairman Nick 'The Company' Alexander
Basic annual subs rate for 12 issues: UK £45, Europe £59.88, Rest of World £69.83 (p&p incl)

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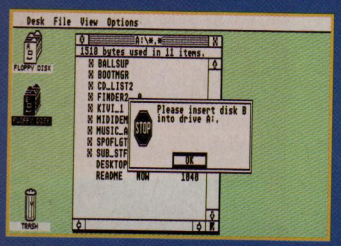
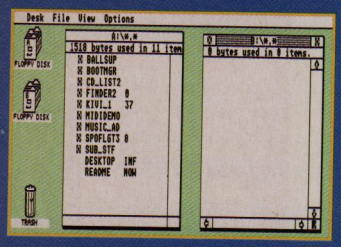
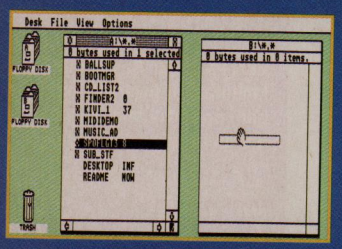


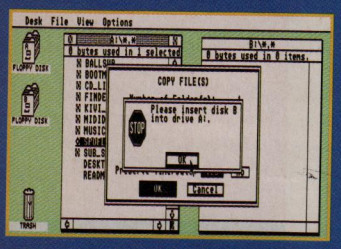
1 Assuming you have a single-drive system, insert your Cover Disk back-up into drive A. Double-click on the drive A icon to access it. Next, double-click on the drive B icon.



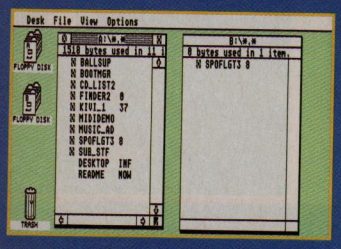
2 When prompted, remove the Cover Disk and insert your blank disk into drive A. Click on OK and a separate window should appear with the contents of the disk within it.



3 Next, click and hold down the left mouse button on the file or folder you wish to copy across to your blank disk. Drag the file over to the drive B window before releasing the button.

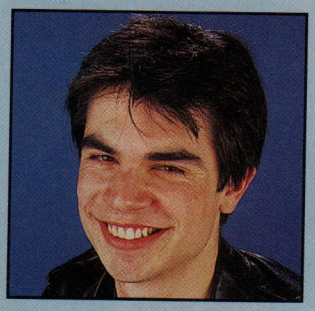


4 An alert box will tell you to insert disk A (your Cover Disk). Do so, click on OK and follow the on-screen instructions. You may have to swap disks several times during this process.



5 Just follow the instructions on the screen until the file or folder you wished to copy has been transferred – it'll be displayed in drive B's window.

Cover Disk



When you've finished carol singing, try out the latest Cover Disk. Nick Peers shakes the snow from his boots, takes off his pink fluffy earmuffs and shows you how.

WWW ACCESS PACK

By: Alexander Clauss *(CAB)*, Steve Adam *(STIK)*, Tim Newsome (overlay program)
Machines: All Ataris
Resolution: 640x200 (ST medium) or greater
Memory required: 512K (1MByte recommended)
Uncompressed size: 507K

Now you can discover what all that Internet fuss is about. This splendid connection pack contains everything you need to access the World Wide Web – apart from a modem and an Internet account, that is. Alternatively, *CAB* can be used as a document reader for HTML documents.

Getting started

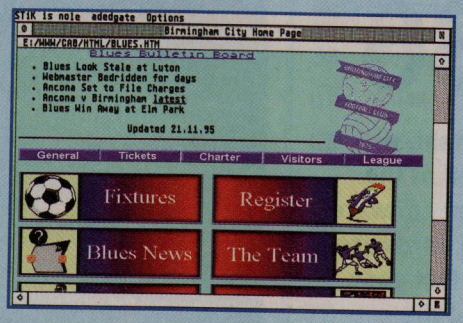
Copy WWW1.TOS to a freshly formatted blank disk and double-click on it to dearchive the contents. Delete WW1.TOS from your disk and copy WWW2.TOS across, then double-click to dearchive it. You can then delete WWW2.TOS as well.

Alternatively, copy both TOS files into a WWW folder on your hard drive and double-click on each in turn to dearchive their contents.

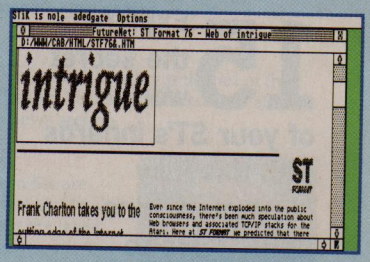
Surf the net

Remember *HTML Browser*, the first graphical Web browser? Since we featured it in issue 76, it has since gained a shiny new name – *CAB*, short for *Crystal Atari Browser* – and now the latest version is on the Cover Disk. Together with *STIK* and the overlay, it enables you to access the World Wide Web from your ST. You still need a modem and an Internet account to actually connect to the Net, of course (see *STF* 65).

To go on-line, you need to open up the *STIK* folder and copy STIK.ACC and the STIK_CFG folder to the root directory of your boot disk or drive. *CAB*, on the other hand, can be run directly from your disk or hard drive – just double-click on CAB.APP to boot it. You can also install *CAB* as an Accessory.



Falcon owners can experience HTML in glorious technicolour. Here's the Birmingham City home page, for example.



On a medium res ST you'll see your HTML documents in four shades of grey. If you've got *SpeedoGDOS*, you can change the fonts to improve the display.

The README file in the STIK folder explains how to set up *STIK* to suit your personal needs (we'll also be covering this in more detail over the next couple of issues). Getting to grips with *CAB* is much easier – just load it up and go through the example HTML documents to discover how it works.

What, no modem?

You don't actually need access to the Internet to read or create HTML documents – *CAB* was originally designed to read HTML documents off-line. HTML makes it easy to create multimedia hypertext documents, and several user groups already use it for disk magazines and support files.

You can spruce up your display any number of ways. For example, if you have *GDOS* or *SpeedoGDOS* installed, you can select different fonts to add variety to the text. However, to view documents in all their colourful glory, you'll need a Falcon or ST with graphics card.

All you need to create your own HTML documents is a text editor that saves documents as ASCII text – *Pen Pal* from this month's disk will do nicely. Turn to page 56 to find out how it's done.

REGISTER NOW

Instructions for registering the various elements of the *WWW Access Pack* can be found in the documentation that accompanies the programs. Joe Connor handles UK support for *CAB*; Denesh Bhabuta is dealing with UK registrations for the other two parts of the pack. The SUPPORT.UK and SUPPORT.TXT documents outline the benefits of registering.

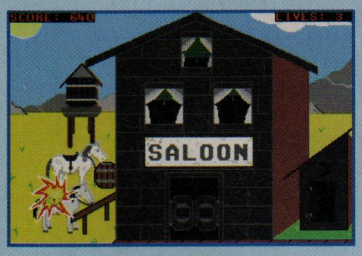
KILLING TIME

By: John Wangler and Jason Huerta
Machines: All STs (TOS 2.06 and Falcon with *STOSFix*)
Resolution: ST low
Memory required: 512K
Uncompressed size: 270K

Killing Time is a furious arcade game packed with gratuitous violence. Plotless, fast-moving and well-armed, it will certainly appeal to adrenaline freaks.

Getting started

Copy KILLTIME.TOS to a blank disk and double-click on it to dearchive the KILLTIME folder. TOS 2.06 and Falcon owners need to unpack the main KILLTIME.PRG and run *STOSFix* to make it compatible with your machines. Falcon owners, be warned: the game is more difficult on your machine because it runs faster.



The Wild West is your second destination. You'll need a fast but steady trigger finger.

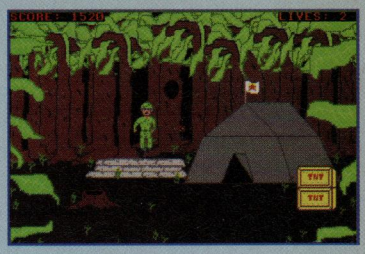
Hello cowboys

The great thing about *Killing Impact* is that there isn't much plot – all you need to know is that you're travelling through time, killing anything that gets in your way.

From neanderthals through to commandoes, punks and aliens, everyone you meet is fair game – just wipe them out using whatever is to hand. Play takes place from a first-person perspective, so all you can see is the area around your sights. As soon as an enemy pops up, press the left button to blast him (or stone him, on the neanderthal's level). Hit your enemy and you score points; miss and he retaliates, claiming one of your precious lives.

Each level is split into three stages, each of which features bonus targets and innocent bystanders. For example, in the second stage of the first level, fish leap out of the water, and you can gain points by stoning them. On the cowboy levels you're up against rats, and some of your enemies take women hostage. Kill the wrong target, however, and you lose points. The bonuses may accelerate your score, but they also distract you from the main enemy.

Killing Time is fun, fast – especially on the Falcon – and furious. Read KILL.DOC for full details, and don't disappoint us, soldier.



Watch out for the hole in the tree. We didn't, and it all went corpse-shaped very quickly (grumble, gripe).

REMEMBER

Write-protect your Cover Disk. Slide the black tab so you can see through the hole.

Make a backup using the *Back Up* program on the Disk. Never ever run anything except *Back Up* directly from the Cover Disk.

Many Cover Disk programs are compressed to fit them on the Disk. Follow the instructions in the Getting started sections to decompress them.

Read the instructions in these pages and in any document file that is on the disk. They're there for a reason.

If you have problems with your ST, consult your manual. If you're still stuck write to: ST Answers, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, BA1 2BW.

MENUINFO 2.41

By: Dirk Hagedorn
Machines: All Ataris
Resolution: Any
Memory required: 512K
Size: 65K

Keep a permanent eye on your system's date, time, Caps Lock status and free memory with this discreet application.

Getting started

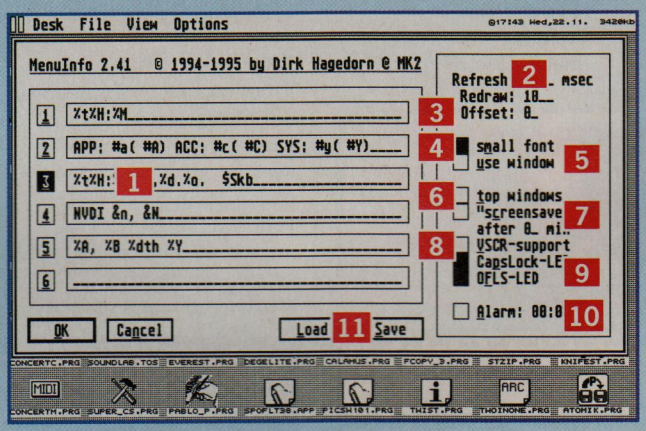
Just copy MENUNINFO.ACC to the root directory of your boot disk or hard drive partition. If you have *ST Guide* installed, you can place the HYP and REF files in the GUIDES folder on your boot drive. *MenuInfo* can be run as a program in any multitasking environment except *MultiTOS* – see MENUINFO.TXT for full instructions.

Data overload

MenuInfo enables you to display system information on the menu bar. With a little help from the configuration program, you can set it up to display exactly what you want, how and where you want it. Your ST's vital statistics can appear in the top right corner of the screen in large or small text, or in a special window bar of their own.

In addition, two LED-style icons can be installed in the top left corner of the screen to monitor the status of your Caps Lock key and, if you have *Kobold* installed, to indicate whether any files have been opened.

The current system date and time can be displayed in several formats. The 'every second counts' brigade can display the whole works, while those of you with less frenentic lifestyles can make do with an informal '10 to 1'. *MenuInfo* also enables you to display all kinds of system information, including the amount of free memory available, the mouse co-ordinates and the current version of TOS. You can even add your own text to clarify it all.



1 The formula boxes for inserting and editing the information you want *MenuInfo* to display. Up to six configurations can be stored in memory at once.
2 Determine how quickly *MenuInfo* updates, both internally and on the screen.
3 Push *MenuInfo*'s display further left to fit other accessories on to the menu bar.
4 Display the information in a small font.
5 Display the information in a GEM window bar instead of at the top of the screen.
6 Bring the window the mouse pointer is in to the top.
7 Blacks out the screen (except the menu bar).
8 Enables *MenuInfo* to support screen expanders (such as *Screenblaster*).
9 Show either the Caps Lock and/or OFLS LED. OFLS only works in conjunction with *Kobold* and indicates that files have been opened.
10 Activate and set an alarm, which is activated in an alert box.
11 Load or save the default configuration.

What else?

Clicking on the Caps Lock and OFLS (open files) LEDs gives you access to other functions. Click on either LED with the right mouse button to bring up a small dialog box enabling you to insert characters that aren't accessible from the keyboard. Alternatively, hold down [Shift] and click on the LEDs with the left mouse button to open the file selector, or Hold down [Control] and click with the right mouse button to quit.

MenuInfo is configured by a special dialog box which is accessed by selecting *MenuInfo* from the Desk menu or clicking on the LEDs. See the screen grab for more information about the various options.

Full details can be found in MENUINFO.TXT, and *ST Guide* users will be pleased to know that hypertext documentation is also provided.

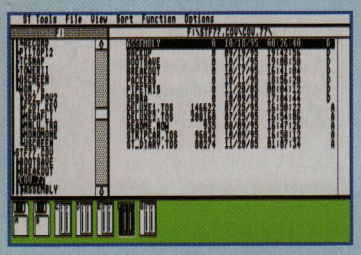
ST TOOLS

By: Stephen Cornio
Machines: All Ataris
Resolution: Medium/high
Memory required: 1MByte
Uncompressed size: 273K

ST Tools is the Atari equivalent of *PC Tools* on the PC. It's a powerful utility for keeping a close eye on your hard and floppy disk drives.

Getting started

Copy ST_TOOLS.TOS to a blank disk or your hard drive and double-click on it to dearchive the STTOOLS1.93 folder. Once that's done, run STTOOLS.PRG. You'll find complete instructions in STTOOLS.DOC, and you should study them carefully before using the program.



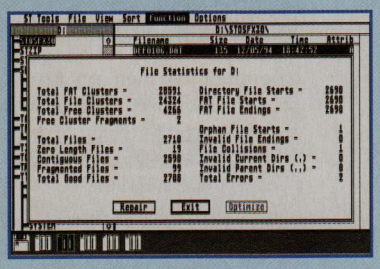
Getting around your disk drive has never been easier than with *ST Tools*. The directory tree takes the hassle out of wading through endless folders.

Disk toolboxes

ST Tools is a powerful disk and file analyser. It enables you to search through entire drives and folders for specific files and modify them in various ways – you can touch them with the current system time and date, for example, or search for a specific string of text. If you've been a bit careless, *ST Tools* will even attempt to retrieve recently deleted files. Its most powerful function, however, is its ability to scan your disks or drive partitions for errors and fragmentation and remedy any problems.

When you load it, you'll be presented with two windows and a row of drive icons along the bottom of the screen. The left-hand window contains a directory tree, while the right-hand one lists all the files in the highlighted directory. These windows, along with the row of drive icons at the bottom of the screen, make it easy to get to your files.

ST Tools works on many different levels, enabling you to get a feel for the basics before you attempt the really dirty jobs. The built-in failsafes help prevent accidental data loss, but as you progress deeper into the program, make sure you back up the data you're working on. The program is shareware, so if you find it useful you should make a contribution.



Make sure you back up your data before delving deeply with *ST Tools*. If you lose a valuable file, its nobody's fault but your own.

PEN PAL 1.2

By: Mountain Software
Machines: All Ataris
Resolution: Medium/high
Memory required: 512K
Size: 51K

This demo of Mountain Software's powerful text editor limits you to 100 lines of text.

Getting started

Open the PENPAL folder and double-click on PENPAL.PRG to run the program. Falcon owners need to unpack PENPAL.PRG first.

Write on!

Pen Pal is a quick and powerful text editor with Mac-like editing tools. All of its functions can be accessed easily from the row of buttons at the top of the screen.

As with all text editors, *Pen Pal* doesn't provide fancy fonts or loads of display options; instead it concentrates on straightforward text editing. This makes it perfect for creating HTML documents – see page 56 for more details.

Follow the instructions on the start-up screen to register, or read PENPAL.TXT.

DSP TUTORIAL

Those of you following Paul Hills' excellent DSP tutorials (see page 63) will want to copy DSPFILES.TOS across to your hard drive. The archive contains various utilities and example files for you to experiment with.

BLINK 3.0

By: Bill Aycock
Machines: All Ataris
Resolution: Any ST resolution
Memory required: 512K
Uncompressed size: 67K

Select and edit your desktop's colours with this suite of utility programs.

Getting started

Copy BLINK.TOS to a blank disk or hard drive partition and double-click on it to dearchive the BLINK30 folder. All of the PRG files can be installed as Accessories – see BLINK30.DOC for details.

Eyecatching

Fancy turning your desktop a nice shade of carrot? *Blink* enables you to select one of 33 desktop configurations at the click of a button, or design your own backdrop. Falcon owners should note that *Blink* only works properly in ST medium or high resolution.

GOOFFY

By: Patrice Bensoussan
Machines: All Ataris
Resolution: Any
Memory required: 512K
Size: 30K

Gooffy enables you to print large ASCII documents in the background.

Getting started

If you have a multi-tasking operating system, just run GOOFFY.APP. Otherwise, rename it GOOFFY.ACC and install it as an Accessory.

No more waiting

Once you have installed it as a Desk Accessory, *Gooffy* can be called up from within any GEM program to print an ASCII file, enabling you to go back to whatever you were doing while it prints. Just run the program, or select it from the Desk menu, then select the file you wish to print using the file selector.

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On a separate sheet, explain concisely what the program does and why it's so brilliant.

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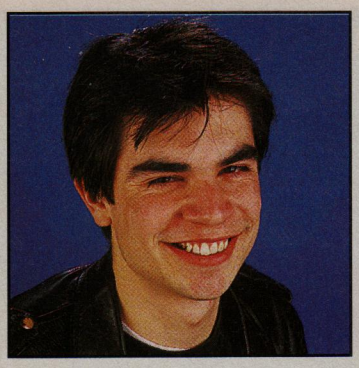


STF News...

Nick Peers flashes his press card as he brings you bang up to date with life in the Atari scene.

SNIPPETS

Titan Designs has just announced version 3 of *APEX Media*. Details of its new features are not yet available, but a provisional price tag of £149 has been set. Existing users will be able to a upgrade for as little as £39, and Titan can be contacted on ☎ 0121 6936669.

System Solutions is distributing two more Epson Stylus printers. Both are colour inkjets and can print in resolutions of up to 720x720 dpi. The Pro A4 model costs £569, while the Pro A3 model is £1,595. System Solutions can be contacted on ☎ 0181 6933355.

Lexicor Software Corporation has moved. The US-based company, whose products are distributed in the UK by 16/32 Systems, has re-located to the following address: Suite (H), 3rd Floor, 108 Peterborough Street, Boston, MA 02215, USA. The company's Web page is still at: http://world.std.com/~Lexicor.

The Association of Atari User Groups, for a long time a source of help for beleaguered Atari owners, has closed.

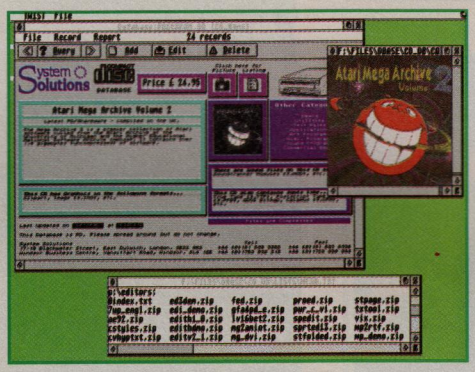
Ease update

System Solutions has just released a major update of its replacement desktop package *Ease*. New features include a more intelligent system for wading through folders looking for the files you're after, a memo icon for keeping notes on your Atari's desktop, and support for *GDOS* printing via the desktop. *Ease 4* will cost £49.95, but existing users can upgrade for £19.95, which includes the price of the new re-vamped manual.

The Panther graphics card is designed for STFM and STE owners and enables your ST to display 24-bit colour graphics via a multisync monitor. The cards include 1MByte of on-board RAM to speed things up (a 2MByte version is also planned) and can be fitted inside the original ST casing. This makes them more flexible than previous graphics cards, which required a Tower or Desktopper case. The Panther will cost £259 for STFMs and £299 for STEs.

A replacement desktop is one software upgrade no serious Atari user should be without, and *Ease* is the Rolls Royce of desktop upgrades.

Finally, System Solutions has produced a free database on disk for customers wishing to browse its extensive CD-ROM catalogue. The database features an overview of each CD-ROM, a graphic of its cover and a full file listing. There are two versions available, for ST and TT/Falcon owners respectively.



System Solutions' packed CD-ROM database was constructed using HiSoft's *Twist 3* database.

The ST version is monochrome and ready to run – customers should send a double-sided floppy disk. TT and Falcon owners get a colour version, but need to send a high-density disk instead. This version is archived, and should be decompacted on to a hard disk with 5MByte of free space. Alternatively, both versions can be downloaded from the ssolutions conference on CIX.

For more details, call ☎ 0181 6933355.

Jaguar VR not 2B?

The long-awaited Virtual Reality headset for the Atari Jaguar is "on hold", at least for a while. A recent story in the industry publication *Computer Trade Weekly* announced that Atari's deal with UK company Virtuality is off.

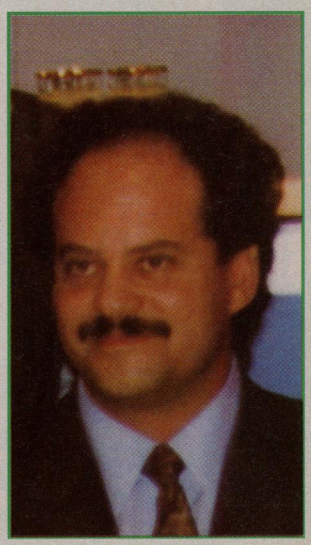
Virtuality was originally contracted to develop the Jag VR hardware, originally slated for a Christmas 1995 release. In its November 6 issue, *CTW* said: "Atari last week reacted angrily to a report that it is turning its back on the Jaguar.

Last week's *Sunday Times* claimed that poor sales of the 64-bit wonder console had left the firm considering a move out of the hardware sector altogether". *CTW* quoted an "Atari insider" as saying "Unfortunately our reasons for pulling out of the headset deal don't tally with what it [Virtuality] want us to say".

The Jag's VR headset is now "on hold".

We contacted Atari UK's Marketing Manager Darryl Still, who was happy to speak about the future of the Jag VR headset, and the Jaguar range generally. He told us: "The Virtuality contract is cancelled. It does not mean the end of VR on the Jag and it certainly does not mean the end of Jaguar or its successors. This rumour seems to have emanated from Virtuality and is probably more connected with its theories than the facts." Watch for the hot scoop next month when we chat to both Still and Atari President Sam Tramiel.

Frank Charlton



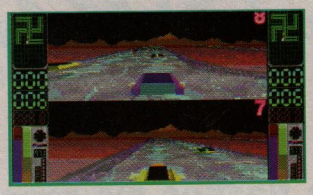
We'll be talking to Sam Tramiel in next month's *ST FORMAT*.

Moon Games

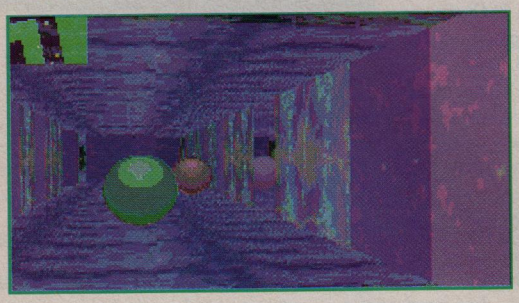
Moon Games is the sequel to the Falcon racing sensation *Moon Speeder* (*STF* 73, 79%). Many new features have been added, making it more than just an update of the original. Thanks to a split-screen, the game now supports two-player battles on a single Falcon (four players can battle it out over two Falcons in this way), and the number of tracks has been increased from 30 to 45.

Unlike the original release, you don't jostle for your original position in a qualifying lap. Instead, you must drive a ball around a labyrinth, searching for the exit. The quicker you find it, the better placed on the grid you'll be. Also, three bonus events have been added, enabling you to amass extra credits. They include breakout and pinball sequences, and take place from the perspective of the ball, lending a novel twist to classic game ideas.

The game requires a 4MByte Falcon and hard drive. Price and availability are, as yet, unconfirmed.



Moon Games' split-screen option lets two players race on a single Falcon.



The quicker you get out of this labyrinth, the better your position on the starting grid.

PD AND SHAREWARE

Denesh Bhabuta is now handling registrations for Kari Heinman's databases *Music Box* (Cover Disk 71), *Movie Box* (Wonder Disk 72) and *Disk Box*. A registration fee of just £10 covers all three of these fabulous programs.

PD versions of these titles are available from Goodmans (☎ 01782 335650) and Floppyshop (☎ 01224 312756).

ST+ is the new disk magazine from Dave Hollis, who helped produce the Panther Owners Group (1995 Award winners – see page 42) disk magazine for *Frontier: Elite II* users. For a copy of issue one, all you need to do is send a disk plus SAE to: *ST+*, 17 Oaklands, Green Lane, Malvern Wells, Worcs, WR14 4JE. Dave is also interested in receiving submissions for the magazine – call him on ☎ 01604 416933 for more details.

Chaos PD has acquired AGPD's catalogue of 750 disks and is incorporating them into its own range. Prices remain at 90p a disk, with a special offer of six disks for the price of five. Contact Chaos on ☎ 01296 89059 for a new catalogue.

Users of Ad.Lib PD should be aware that Andy Curtis can now only provide those programs listed specifically as originating from Ad.Lib PD. Each disk costs £1, regardless of how many programs fit on to it. You don't need to send a disk with your order, but it should be accompanied with an SAE.

French Atari Show

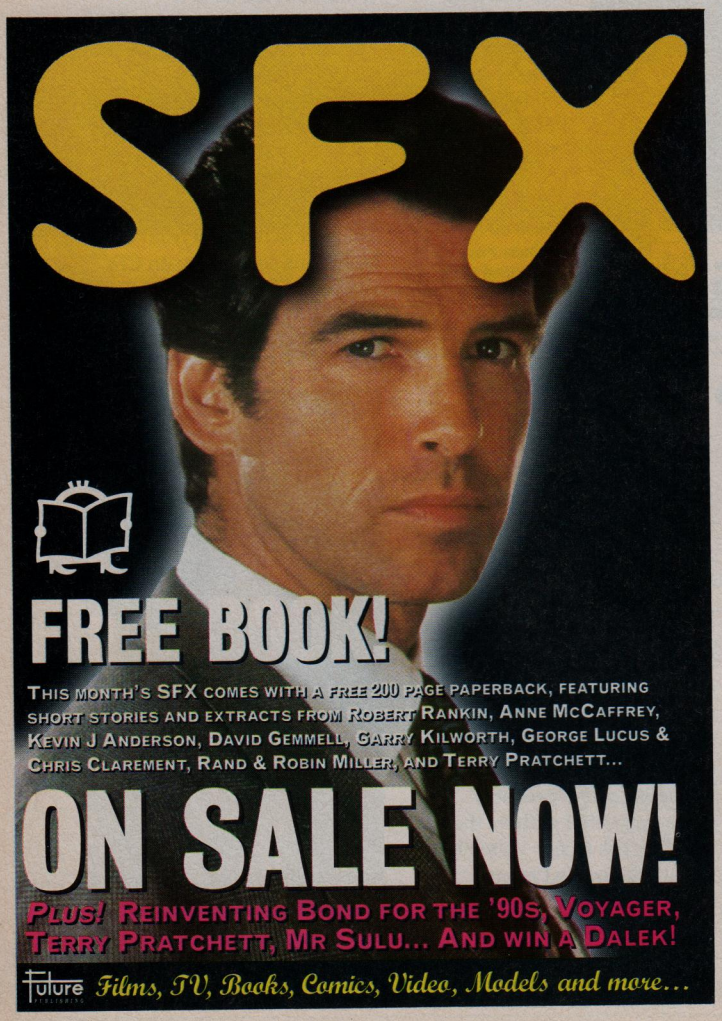
OXO Concept is organising a massive Atari show in Paris for the weekend of the 16 and 17 December. Hot on the heels of ProTOS '95 (held at the end of November in Germany), the existence of this show proves that both France and Germany remain real hotbeds of Atari development.

The show, which is being organised in conjunction with Composcan France, will feature many French exhibitors, including Lexicor Software, Medusa Computer Systems, C-Lab and Steinberg. It will be held at the Porte de Versailles in Paris and more details can be gleaned by accessing OXO's homepage at: http://www.oxo.ch/ or by e-mailing the company at: oxo@iprolink.ch. We'll be featuring a show report in issue 79 or 80.

NET NEWS

STOS users will be glad to hear that the Mark Smith's Atari Web pages now feature all 24 issues of the STOSser disk magazine in the rapidly expanding *STOS* section. Access the site at http://www.mcc.ac.uk/~dlms/atari.html.

We may yet see a shareware version of *Doom for the ST*, if recent Internet newsgroup discussions are anything to go by. Although the main thrust of any conversion would naturally centre around the Falcon because of its advanced machinery, there was also talk of a limited ST version. Whether this is utter rubbish or a valid prediction only time will tell. In the meantime, we'll keep an eye out for any further developments and, remember, you heard it here first.



A library of clip-art

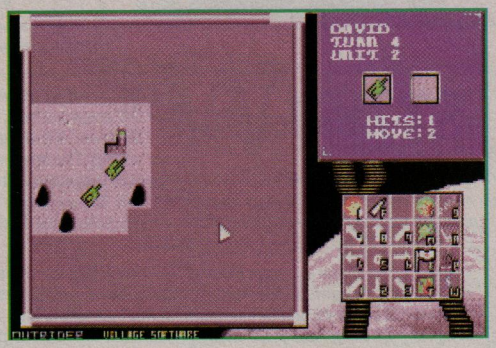
The Clipart Library has replaced GL-PD as Gareth Lovering's main business interest on the Atari. After three years in the PD business, Gareth has decided to try something a little more specialised, and now sells shareware and CD-ROM clip-art in IMG, PCX, GIF and TIFF formats. All shareware disks will cost £1.50 (or £1.75 with a printed thumbnail sheet of the contents). For a catalogue, send an A5 SAE to: The Clipart Library, 62 Colwyn Avenue, Winch Wen, Swansea, SA1 7EJ.

GL-PD is still trading, although it now concentrates on printing labels and stationary to customers' specifications. Its remaining stock of Atari PD is still available for just 70p a disk. You can contact The Clipart Library or GL-PD at ☎ 01792 799762.

Village full of games

Hot on the heels of *Outrider*, reviewed on page 28, comes news of two more releases from Village Software. *War Cry* is the sequel to *Outrider* and will be available early in the New Year. It's described as a competitor for *Civilization*, so could well prove popular with fans of that top-selling game.

Also underway is work on a role-playing game set in Japan. *Dark Ritual* promises to be historically accurate and, like *War Cry*, runs on all STs. Falcon-enhanced versions, including *Outrider*, are set to follow each game's ST release. Meanwhile, Village can be contacted on ☎ 01275 843241 before 11am, or you can e-mail: futureshocks@village.demon.co.uk.



Outrider is just the first of a set of ST games from Village Software. It's reviewed on page 28.

TOP BYTE NEWS

Owing to a 'glitch' of Apollo 13 proportions, last month's Top Byte story got horribly mangled. Consequently, we feel it's only fair to re-run the parts of the story on *Aronath*, that marvellous swords and sorcery epic that's promised in the New Year.

***Aronath* is an overhead cross between *Gauntlet*, *Cannon Fodder* and *Nethack*. The bit that got mangled concerned the game's multi-player option, which makes it possible for up to four STs to be linked together for a single game with players able to co-operate and betray each other at the drop of a hat.**

Other Top-Byte games currently under production include *Space Ace STario*, *Cyber Knight*, *Pothole* and *Solar War 2*. The last two are being released in conjunction with 999 Software, which is also working on a 'director's cut' of *Alien Thing*.

Top Byte is also offering limited numbers of major ST games at low prices. These include *Cannon Fodder* (£18.99), *Lotus Trilogy* (£11.99), *Robocod* (£7.99), *Bart vs the Space Mutants* (£11.99) and *Cool World* for £8.99. All prices include postage and the titles are selling fast. So, if you're after some last-gasp Christmas presents give Top Byte a call on ☎ 01622 763056.

Aronath will enable your team to use cover from opposing fire, just as in real life.

New Falcon products

Compo has acquired exclusive UK distribution rights for a Falcon accelerator based around a 68040 processor (the next step up from the Falcon's 68030 processor). Although the accelerator runs at 32MHz, the clock-doubled processor runs at twice this speed. You will need to house your Falcon in a new case (such as the Desktopper), but once the board is fitted, you can add up to 128MByte of RAM to your machine.

Prices start at £499 for the board, although you have to pay extra for the processor. Also due for release in early 1996 is *Neon 3D* (see *STF* 73) and Compo promises many more "exciting releases" in the year ahead. Compo can be contacted on ☎ 01487 773582.

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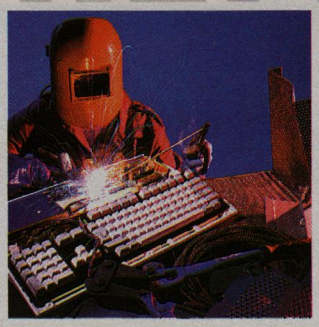

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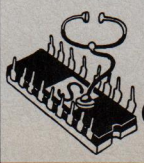

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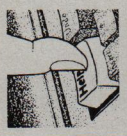

ST Applications

We launched our Atari ST magazine back in 1986 and it is still going strong! The latest version of ST Applications combines a traditional paper magazine with reviews and articles on disk in World Wide Web format pages. You can buy the latest copy of ST Applications (magazine plus disk) for just £1.75. A 12-issue subscription costs £15.

We also run a comprehensive PD and Shareware library - disks cost from £1 each - as well as publishing a wide range of sensibly priced commercial software and books. Some of our best sellers are: Imagecopy, Fonty, Address, Calamus Assistant, First Word and Timeworks Publisher Users' Guides, Fontkit Plus, Ultimate Virus Killer, UIS, View II, and Warp 9.

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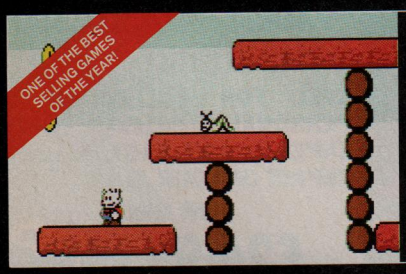

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Come with us as we voyage inside your ST to a world full of chips, ports and circuit boards. Discover how your ST works, and what to do when it all goes wrong. Frank Charlton and Andy Curtis are your guides...

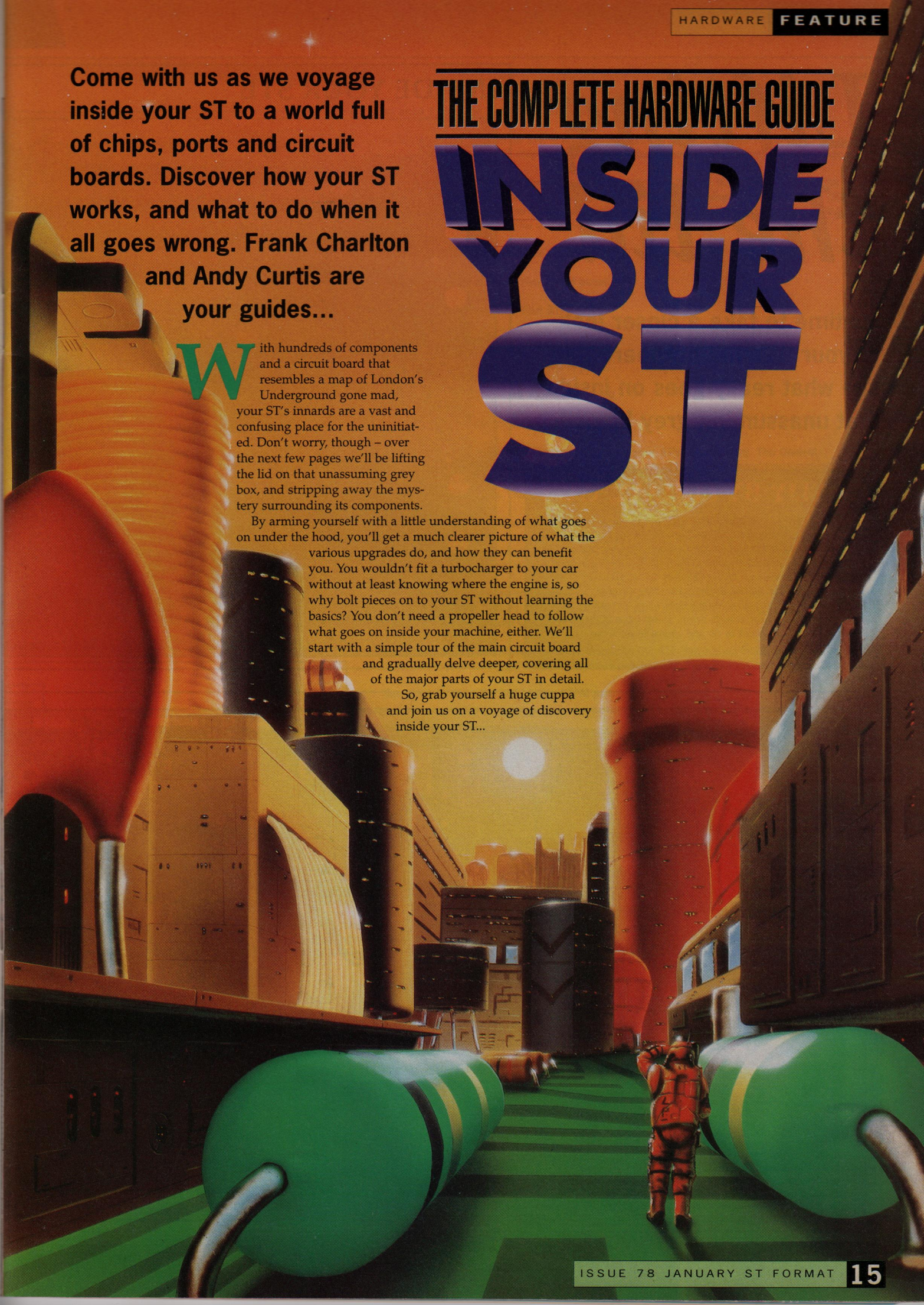
THE COMPLETE HARDWARE GUIDE

INSIDE YOUR ST

With hundreds of components and a circuit board that resembles a map of London's Underground gone mad, your ST's innards are a vast and confusing place for the uninitiated. Don't worry, though – over the next few pages we'll be lifting the lid on that unassuming grey box, and stripping away the mystery surrounding its components.

By arming yourself with a little understanding of what goes on under the hood, you'll get a much clearer picture of what the various upgrades do, and how they can benefit you. You wouldn't fit a turbocharger to your car without at least knowing where the engine is, so why bolt pieces on to your ST without learning the basics? You don't need a propeller head to follow what goes on inside your machine, either. We'll start with a simple tour of the main circuit board and gradually delve deeper, covering all of the major parts of your ST in detail.

So, grab yourself a huge cuppa and join us on a voyage of discovery inside your ST...



Lifting the lid

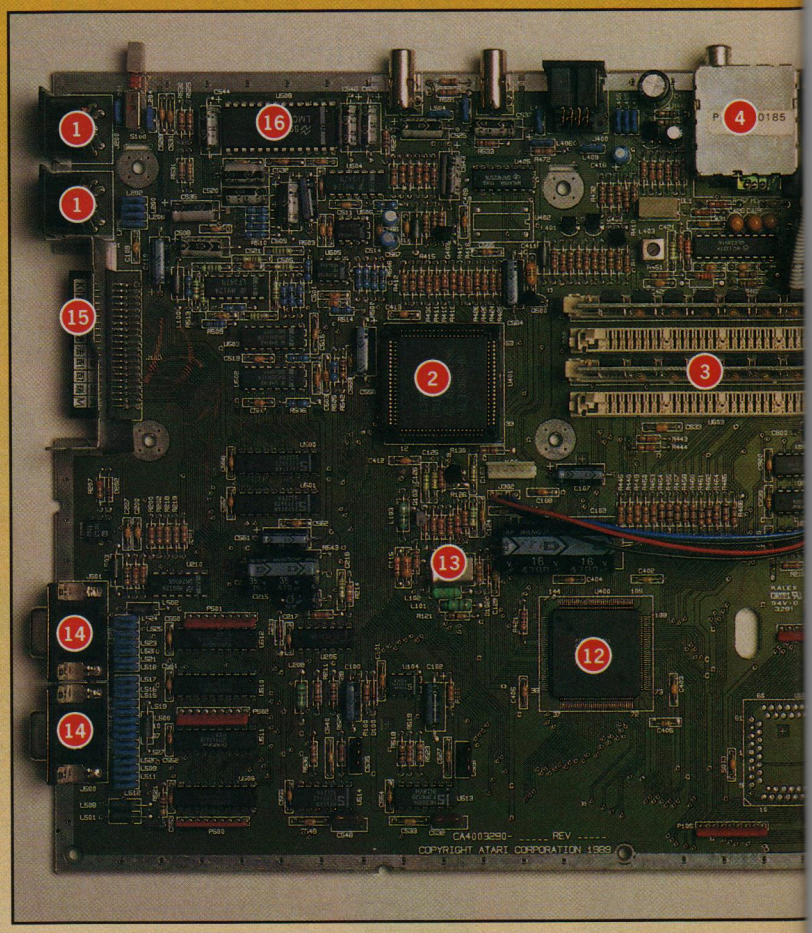
It's time to take a closer look at your ST's motherboard and see what really goes on inside that unassuming grey box.

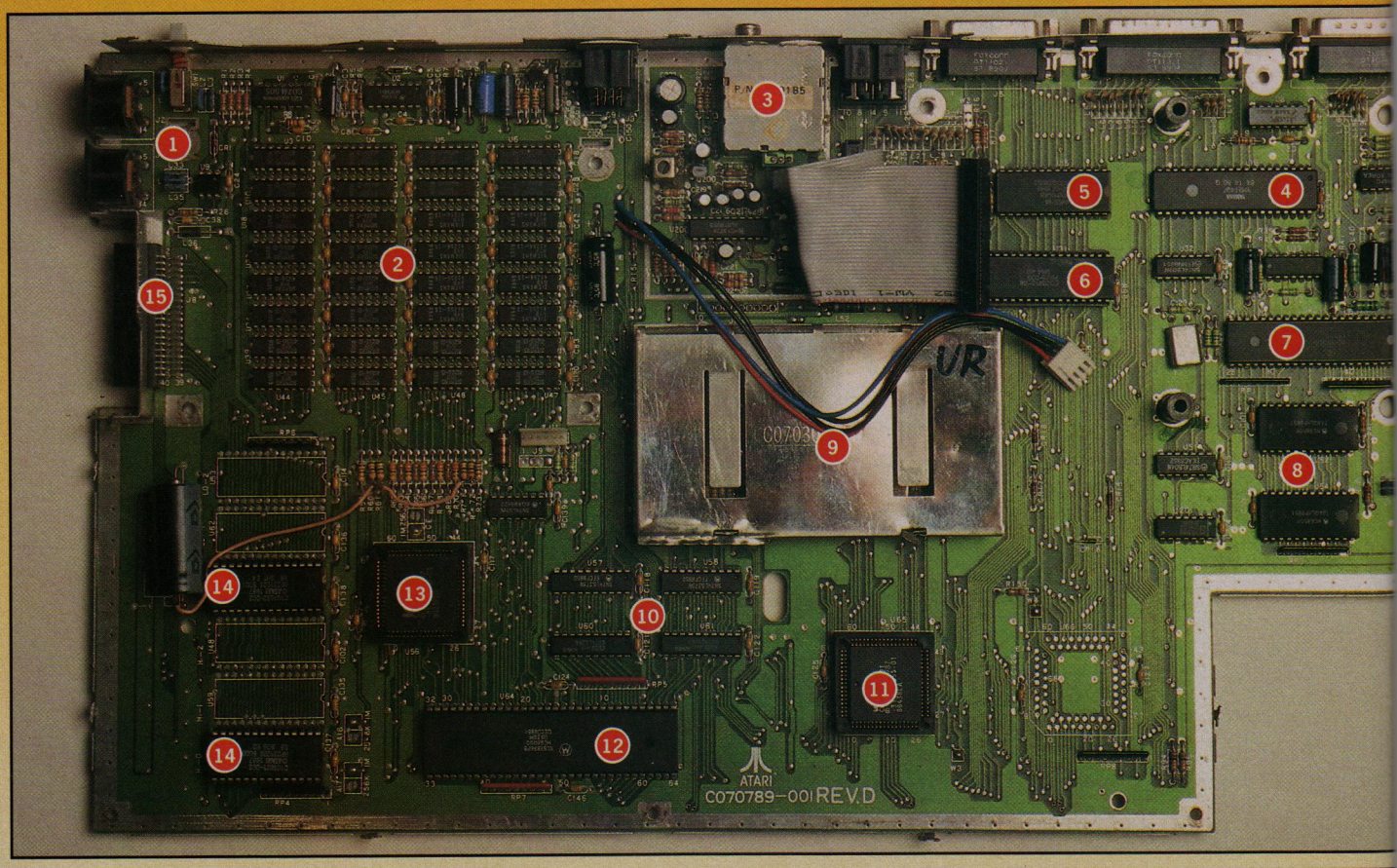
READY BY FRIDAY, GUV

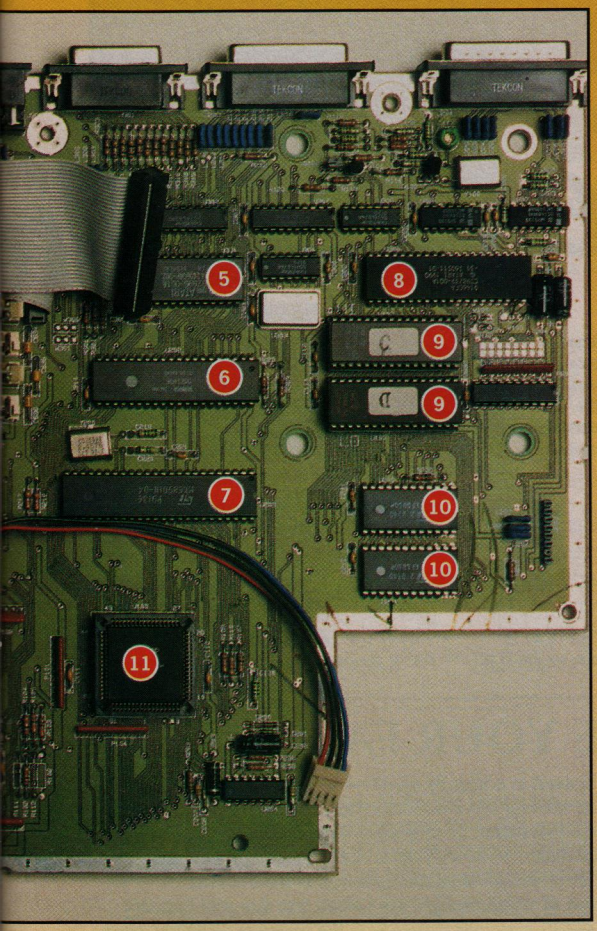
It happens to us all eventually: you switch on your ST one day, and nothing happens. Time to send for the repair man. While it may be tempting to fiddle with the components yourself, please don't treat this guide as an aid to DIY repairs – there's a lot of complex stuff inside your ST, not to mention some life-threatening electric shocks if you're not very careful.

A professional repair is always best when something as intricate as a computer breaks down, so on page 22 we'll be showing you exactly what to do and where to go if the unthinkable does happen.

INSIDE YOUR STE







1 See point 1 from the Inside Your STFM panel.

2 The Video Shifter chip on an STE is not shielded like the STFM's. Instead of the big silver box, the STE uses Atari's custom chip to generate the video signals you need for your screen display.

3 The memory on an STE is organised very differently from that on the STFM. Gone are the surface-mounted DRAM chips, which are replaced by four Single Inline Memory Modules (SIMMs) slots. These SIMMs are easy to fit because they simply snap into place, so upgrading your STE's memory is simplicity itself if you are experienced with electronics.

4 See point 3 from the Inside Your STFM panel.

5 See point 5 from the Inside Your STFM panel.

6 See point 4 from the Inside Your STFM panel.

7 See point 7 from the Inside Your STFM panel.

8 See point 6 from the Inside Your STFM panel.

9 See point 14 from the Inside Your STFM panel.

10 See point 8 from the Inside Your STFM panel.

11 The 68000 is the single most important chip on your ST's circuit board. The Central Processing Unit (CPU) is a massive number cruncher, capable of performing thousands of calculations each second. Ultimately, it is these calculations which govern the screen display and functionality of a program. Think of it as the big boss, telling all the other parts what to do.

12 The combined Blitter, Glue and MMU chip is a custom chip made by Atari in order to save space on the STE's motherboard. The MMU section handles data storage and retrieval, the Glue section acts as a foreman, holding the whole system together, while the Blitter quickly shifts graphics around the screen without the need for direct CPU processing.

13 The System Crystal runs at 32MHz and is used as a reference to keep the computer in sync with itself. For software where the timing is critical, such as MIDI sequencing, accuracy is vital and this is where the System Crystal comes into play.

14 The analogue joystick ports, which are unique to the STE, have been sadly under used by software developers, although some new games now use the Jag's Powerpad in these sockets.

15 See point 15 from the Inside Your STFM panel.

INSIDE YOUR STFM

1 The MIDI ports are mainly used for connecting synthesisers and sound modules. These serial ports can also be used to network two or more ST's together if you have the right software, such as the PD utility *Little Net*.

2 This is the memory for a 1040 STFM, which is mounted directly on to the circuit board. The STFM uses Dynamic Random Access Memory (DRAM) chips, which have to be soldered into place. The power supply sits directly over the memory.

3 The modulator enables you to use a standard television set with your ST. It converts the direct video signals, which are suitable for a proper colour monitor, and converts them into RF signals, which are similar to actual TV broadcasts.

4 This is the Yamaha Sound Chip, which is responsible for the various clicks and squawks of which your ST is capable. It also helps to control the printer port, disk drive and serial port.

5 The WD1772 chip controls access to the floppy disk drives.

6 The Direct Memory Access (DMA) chip controls access to your hard drive, enabling your ST to receive data at around 1Mbyte per second, without using the CPU. Naturally, this relies on your hard drive being able to deliver data at this kind of speed.

7 The Multi-Function Peripheral (MFP) chip is mainly used to drive the serial port for modem access. It also helps out with printer port control.

8: The Asynchronous Communications Interface Adaptor (ACIA) chips are used to process data sent from and to the MIDI ports and keyboard. The keyboard processor and MIDI ports deal with data in serial form and this needs to be converted by the ACIA chips into a parallel format before it can be processed by the CPU.

9 This silver box contains the Video Shifter chip which generates your screen display.

10 These four chips are memory buffers that help to speed up the system's performance.

11 The Glue chip co-ordinates the interaction between many of your ST's components. Think of it as the chief foreman who keeps all the other systems in check.

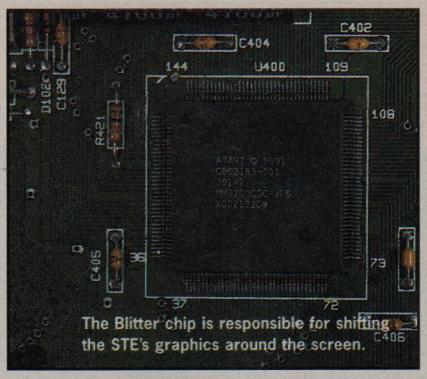
12 This is the main Central Processing Unit (CPU). It handles the binary calculations necessary to run all computer programs.

13 The MMU works hand in hand with the CPU to pass data to and from the Random Access Memory (RAM). The MMU is crucial in governing how much memory your ST can handle and how fast it can access it.

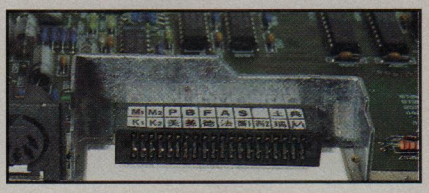
14 The TOS chips are the Read Only Memory (ROM) chips that store the basic system software. When you see the standard Atari desktop, it is loaded from the TOS ROMs.

15 The cartridge port was designed as a quick way to input data into your ST. Although little software was supplied on cartridge, a wealth of other uses have been found for this port.

Under the microscope



The Blitter chip is responsible for shifting the STE's graphics around the screen.

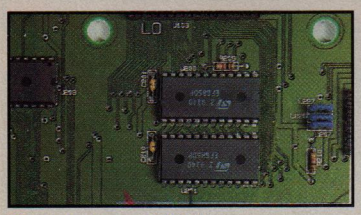

This is a side-on view of the cartridge port.

Okay, so you know your way around the ST's motherboard, but what do all the different components do? Frank Charlton explains all.

Your ST is a complex beast, full of integrated circuits, resistors, capacitors and other components. While you don't need to know what every part on your ST's motherboard does, it helps to understand the basics. Over the next four pages, we'll delve deep into your ST's innards, and explain just what everything does...

ACIA chips

All Atari computers, from the STFM up to the Falcon, use two Motorola 6850 ACIA chips. Since the ST's CPU deals with data in a parallel format, data coming from devices or ports in serial format – such as that from the MIDI port – needs to be converted.


These are the two ACIA chips.

One of these chips deals with the operation of the ST's MIDI interfaces, while the other talks to the Keyboard Controller chip to handle the data from the keyboard, mouse and joysticks.

Blitter

An acronym for Bit Block Transfer Processor, the Blitter is an Atari custom-designed chip that moves chunks of graphics data about the screen without using the processing power of the main CPU. A 68-pin chip, the Blitter takes 16 data and 23 address lines, and has its own separate memory. Essentially, it's a hardware implementation of Atari's original BitBLT code. The Blitter chip shares the system bus with the CPU though, so isn't 100 per cent independent. The Blitter was fitted on the original Mega ST models, as well as all STE and Falcons. The TT doesn't have a Blitter chip.

Cartridge port

The cartridge port was originally designed to accept plug-

JARGON BUSTERS

Serial data: data is sent as a long string, one piece at a time; data that is waiting to be transmitted is queued up until it can be sent. Serial data is used for modem transmissions and some old printers.

Parallel data: unlike the single-byte serial format, parallel data is sent eight bytes at a time across separate lines. Parallel connections are used by printers, and work much faster than serial connections.

Data lines: these are hardware connections between one device (or component) and another along which data can be both transmitted and received.

Address lines: these are hardware connections that enable devices to access the CPU's address registers, areas where addressing information is stored.

System bus: the ST's main path for data transmission, the system bus handles most of the data within the ST.

Dongle: a hardware device used for copy protection. The software querys the relevant port to see if the dongle is attached, refusing to run if it's not present.

INSIDE YOUR FALCON

As the Falcon is housed in a slightly modified ST case, you'd be forgiven for thinking that its innards are essentially the same as its predecessors. The Falcon is much more than an upgraded ST or STE, though – it's a completely new computer in its own right. Atari dispensed with, and changed, a number of design elements featured in the Falcon's predecessors, some of which brought the Falcon into line with industry standards, while others ironically moved it in the opposite direction. Here we'll concentrate on the major changes that appeared in the last Atari computer produced to date.

1 The Floating Point Unit (FPU) socket. This is a standard chip socket designed to house the Motorola MC68882 FPU, or maths co-processor, chip. The 68882 improves the Falcon's speed by quite a thwack when dealing with complex calculations, but only if the software, like 16/32's *Xenomorf*, is designed to make use of it. The FPU isn't fitted as standard, but is easily installed.

2 The RS232 port. Unlike the ST's older 25-pin connector, the Falcon uses a modern 9-pin socket for connecting serial devices like modems. You can buy a 25- to 9-pin adaptor to hook up standard modems from any good electrical store.

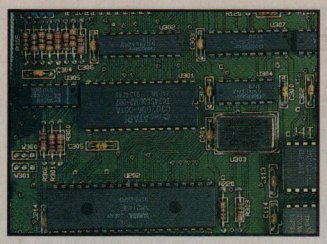
3 The internal hard drive connector. This row of pins is how the Falcon communicates with its internally fitted IDE hard drive. Some Falcons are supplied without the drive, but if you have a drive bracket and a standard IDE cable, you can easily fit one.

4 The monitor port. In order to cope with the Falcon's massively enhanced graphics, Atari fitted a 19-pin analog monitor port that enables you to connect your Falcon to a PC-standard VGA monitor. You can still use older ST colour or mono monitors, but you'll need one of Atari's adaptors.

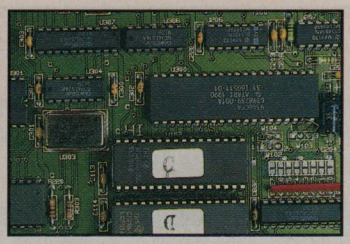
5 The SCSI-2 port. Finally dispensing with the non-standard DMA port, Atari fitted a full SCSI-2 interface to the Falcon. This is where you attach SCSI hard drives, CD-ROMs and scanners, using a special 50-way cable.

6 The stereo sound in/out sockets. Two mini-jack sockets provide access to the Falcon's superb sound system. One provides stereo output at up to 48KHz, while the other accepts stereo audio at microphone level – that is, an unamplified, quiet signal.

7 The DSP interface. This 26-pin connector gives you direct access to the DSP chip, and is used by devices like the FDI interface provided with *Cubase Audio*.



Meet the disk controller chip, or the WD1772, as its known to its friends.



The DMA chip (above the TOS chips) handles intensive data transfers.

in cartridges containing programs and data of up to 128K in size, much like the game cartridges on Atari's 8-bit machines. Little software was released like this, though, mainly due to high prices and the limited storage space (notable exceptions are *Fast BASIC* and *BackPack*, both from Computer Concepts). The port is now mainly used to connect external devices, such as sound samplers, video digitisers and hand scanners, as well as security 'dongles' for programs like *Cubase*. It's also used to connect diagnostic cartridges to find faults prior to repair.

Disk controller

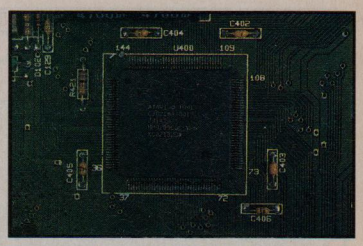
This is the WD1772 chip, manufactured by Western Digital, which is used to control all floppy disk processes. It accepts calls from TOS to read, write and access a disk, and converts those calls to the electrical impulses required to move the drive's stepper motors and disk heads.

The WD1772 was replaced by Atari's AJAX chip in the Mega STE, TT and Falcon computers. AJAX is essentially an enhanced WD1772 chip with clock-speed modifications, which are necessary to handle the rare enhanced high-density and enhanced-density disk formats.

DMA chip

The DMA chip is an Atari-designed custom chip made to handle intensive data transfer without overloading the ST's CPU. For obvious reasons, speed-critical tasks – such as accessing a disk or transferring data from a hard drive – need to be very fast and free from errors. The DMA assists with these tasks, as the CPU couldn't cope alone.

The DMA chip also interfaces with hard drives and some printers (like the original Atari laser printers) via the DMA port. In addition, it provides enhanced sound capabilities in the STE, TT and Falcon models, and enables processor-intensive activities, such as playing sound samples, to be carried out without straining the CPU.



The Glue chip on the STE is hidden away in thi MCU chip, along with the MMU and Blitter.

Glue chip

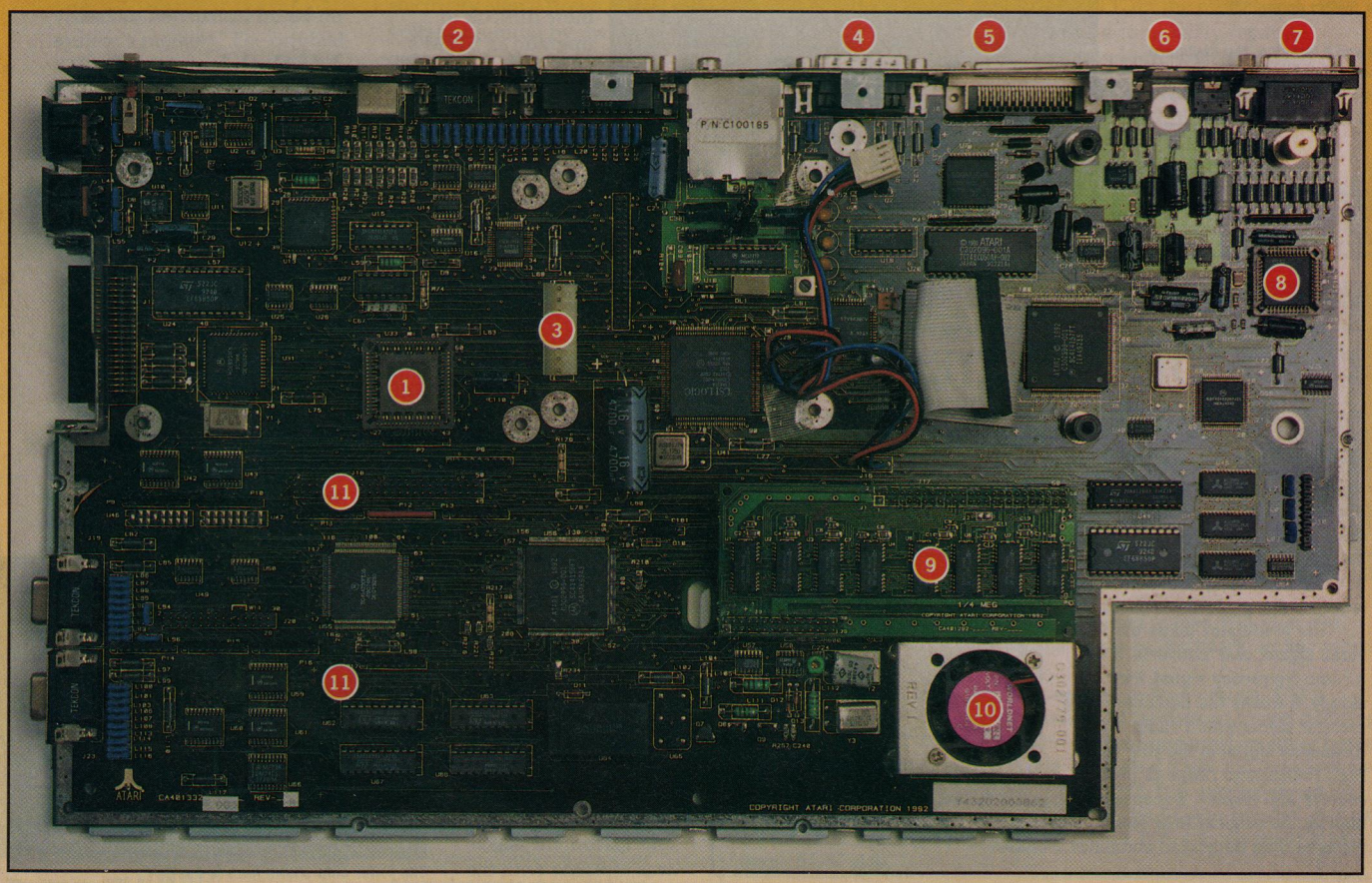
The Glue chip is only present as a separate device in the original STFM design. A sort of 'housekeeping' chip, it gets its name from the fact that it supposedly 'glues' other components together, helping to integrate and manage them. In later Atari machines, such as

8 The DSP chip. The Motorola MC56001 Digital Signal Processor provides a major portion of the Falcon's power. It's a chip designed to work with digital data very quickly, and forms the core of the Falcon's sound system. It can also be used for complex graphical manipulation.

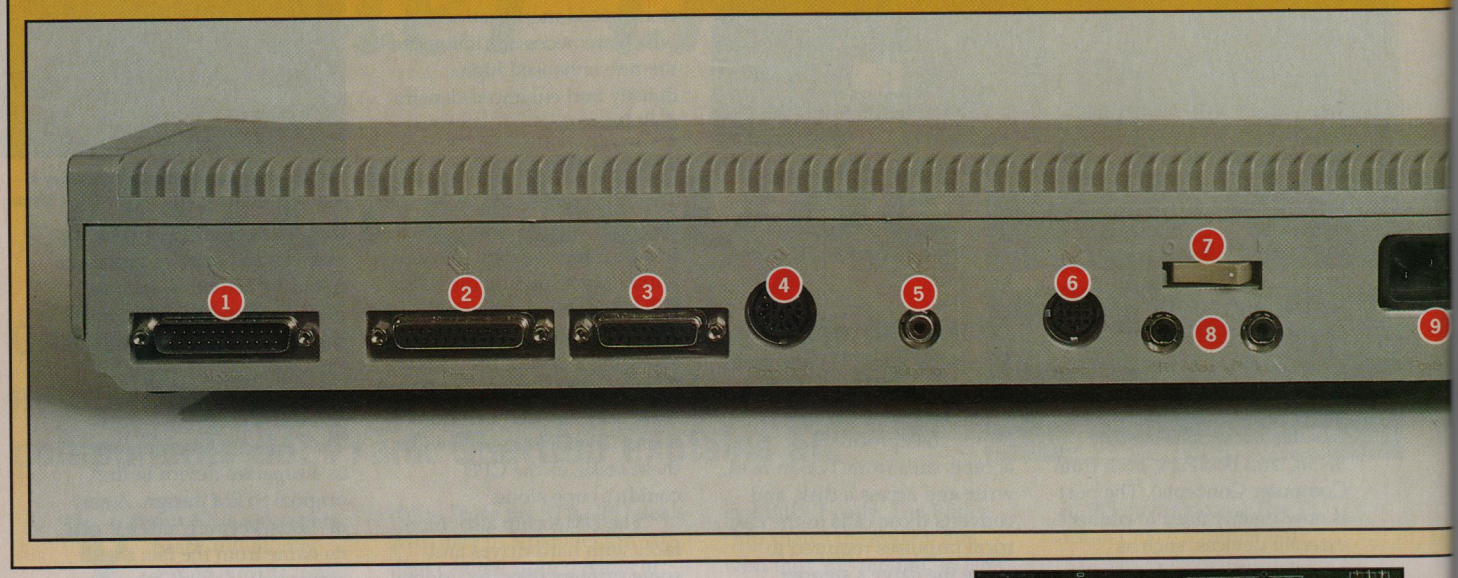
9 The Falcon Memory Board. Atari dropped the STE-style SIMM boards in favour of its own design. A single plug-in memory board provides configurations of 1, 4 and 14MByte.

10 The cooling fan. This cools the Falcon's internal components, especially the RAM board.

11 The Expansion Bus connectors. These consist of one 30-pin and one 50-pin interface, both designed as 'processor direct' expansion slots. They communicate directly with the Falcon's CPU for high-speed access. Hardware devices such as Titan's brilliant Expose video digitiser use these connectors.



MAKE THE CONNECTION



the STE and TT, the Glue chip was replaced with a single chip known as the Memory Control Unit (MCU), which is basically a combination of the MMU and Glue chips.

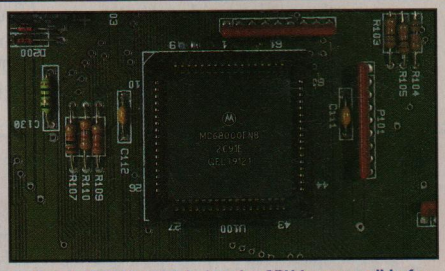
Keyboard Controller

Unlike other computers, the ST range has a dedicated keyboard processor chip fitted as standard. The HD6301 handles all input from the keyboard, mouse and joysticks without using the CPU. The HD6301 is similar to the dedicated CPUs used on early home computers, with a full 8-bit microprocessor and 4K of ROM. It also contains the ST's real-time clock, which counts in increments of one second. The HD6301 communicates with the motherboard via a serial link, which is similar to a modem port except that it runs at the slower rate of 9,600 bits per second.

Memory

The ST's memory chips provide the Random Access Memory your ST needs to operate. On the original STFM, the memory consists of single DRAM chips, which are soldered directly to the STFM motherboard. The main effect of this design is that it's more difficult to upgrade an STFM's memory, as soldering is almost always involved.

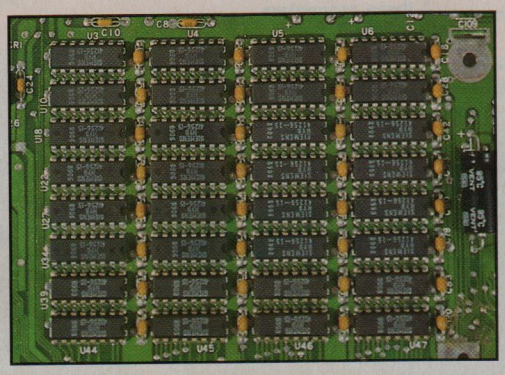
With the release of the STE, Atari designed the motherboard to accept the industry-standard Single Inline Memory Modules (SIMMs). There are four slots, and slots one and three must always be occupied. With SIMM sizes of 256K and 1MByte, your STE's memory can be configured to either 512K, 1MByte, 2MByte or 4MByte.



It doesn't look like much, but the CPU is responsible for all the binary calculations you need to run any software.

On the right are the STFM's DRAM memory chips. These were changed for SIMMs on the STE.

As you'd imagine, the keyboard controller chip handles data from the keyboard, mouse and joysticks.



Main CPU

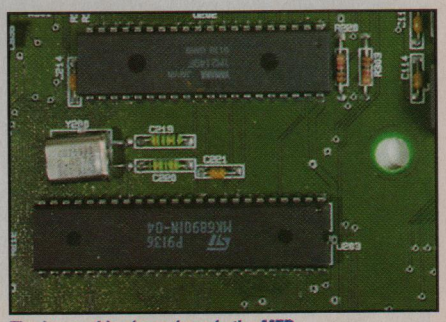
The Central Processing Unit (CPU) is the heart of your ST. The CPU inside the ST and STE is the Motorola MC68000, as used by the original Amiga and Apple Mac computers.

On enhanced machines like the TT and Falcon, the 68000 was replaced with the superior MC68030 chip. Along with a number of other improvements, the 030 speeds up operations and provides on-board instruction caches.

MFP chip

MFP is an acronym for Multi-Function Peripheral, and all Atari machines possess at least one of these Motorola MC68901 devices.

True to its name, the MFP handles lots and lots of tasks, including system timers (for synchronising your ST's components) and the management of serial ports. Essentially, it's an input/output manager for all serial data on the ST. The Mega STE and TT models use two of these chips, giving you two serial ports as opposed to the STFM's one.

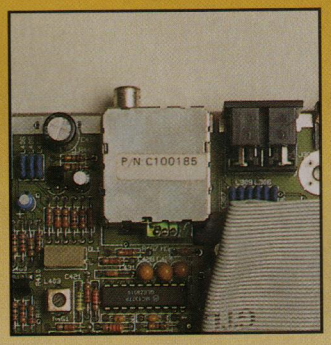


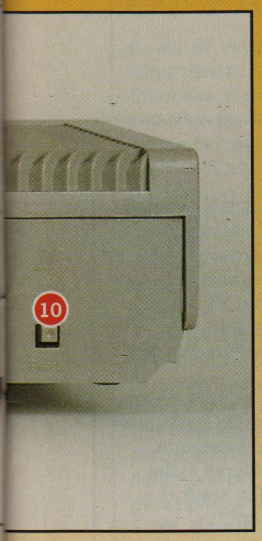
The lower chip shown here is the MFP.

THE MODULATOR

The ST is designed to display its output on a dedicated monitor screen. To that end, the video signal is sent to the monitor as an RGB (red, green and blue) signal. Atari was smart enough to realise that not everyone can afford a monitor right away, however, which is where the modulator comes in.

The modulator takes the RGB video signal, and 'converts' it into a radio frequency signal. Put simply, it mixes the dedicated RGB monitor signal with a radio frequency signal in the UHF (Ultra High Frequency) range to produce a signal that any domestic telly can receive and display. Because the signal is mixed, the quality isn't as high as the original RGB output, which is why TV sets produce fuzzier pictures than dedicated computer monitors.





The back of your STE provides a host of sockets and ports to talk to other peripherals. If you've got an STFM, it isn't radically different – the STE simply has an additional two stereo outputs.

1 The RS232 Serial port. This 25-pin connector provides a serial interface that enables your ST to communicate with the outside world using gadgets like modems.

2 The parallel port. Another 25-pin connector, the parallel port is generally used to connect a printer to your ST, although other external devices, like sound samplers, can sometimes find a home here.

3 The DMA port. This 19-pin connector provides high-speed connections for DMA devices, such as hard drives or the Atari laser printer.

4 The external floppy disk port. This 14-pin connector provides your ST with an interface to a second 720K floppy disk drive.

5 The RF Output. This is a standard phono connector that enables you to plug your ST into an ordinary television set instead of a monitor.

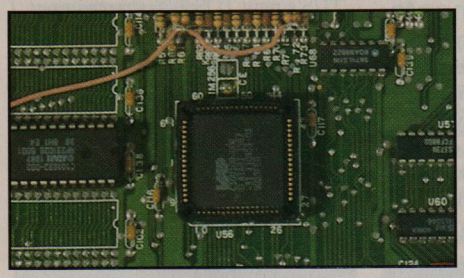
6 The monitor port. This is a 13-pin connector that enables you to connect a dedicated RGB colour or high resolution mono monitors to your ST. Pin 13 is called the 'monochrome detect' pin (if a pin is present here, the ST boots in high resolution mode). You shouldn't fool with this pin as it could damage a colour monitor.

7 The on/off switch.

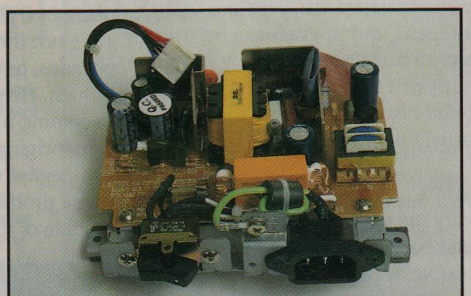
8 The stereo outputs. This pair of standard phono connectors provide true stereo sound output to an external amplifier or recording device.

9 The power connector. An industry standard 3-pin power connector, supplying 240V to the internal power supply board.

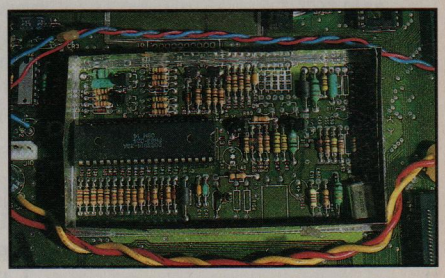
10 The reset button. This performs a 'warm' reset of your ST: TOS is reloaded from ROM and the ST reboots, but without the full initialisation cycle which happens when you turn the power switch on.



The square chip is the STFM's MMU. This was incorporated into the MCU on the STE.



The ST's power supply comes on its own dedicated board.



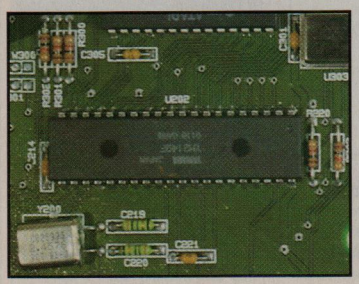
The Video Shifter generates the signals you need for your screen display.

MMU

The MMU interfaces with the ST's main CPU, and deals with all its requests to access the system's memory. The original STFM MMU also assisted the Video Shifter in the task of producing the ST's video signal. Despite the fact that the ST's 68000 CPU is capable of accessing up to 16MByte of RAM, the MMU only lets you address 4MByte. This limitation is due to the fact that Atari decided to opt for a lower power MMU during the computer's original design.

Power supply

Unlike the Amiga, the ST's power supply is fitted inside the case. It sits on its own dedicated board, which is attached to the top left corner of the motherboard by screws. The power supply board contains the necessary components to take a standard 240V mains electricity signal down to the voltage required by the ST. The output from the power supply is supplied as separate 5 and 12V signals, and feeds directly into the motherboard via a snap-on connector.



The Yamaha YM-2149 chip.

Sound chip

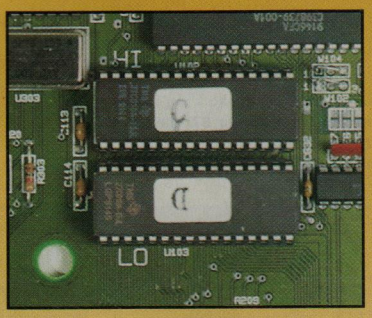
The original STFM comes with a fairly basic sound chip, the Yamaha YM-2149. The chip features three independently programmable sound or tone generators and a 'white noise' generator, which is often used to add 'percussive' effects. It also has a mixer stage to combine the tone and noise channels. Each channel can generate pure tones from 30Hz to 125KHz. The chip also has two 8-bit parallel ports, and is used as a secondary controller for the ST's parallel printer port. Despite the enhanced sound capabilities of the STE, TT and Falcon, the YM-2149 still exists to keep the newer machines backwardly compatible.

Video Shifter

The Video Shifter is another Atari-designed custom chip. The Shifter converts data held in the ST's memory into a format suitable for output via the dedicated monitor port or modulator. The signal produced can be either monochrome (for high resolution) or made up of separate red, green and blue components.

With the STE and TT's enhanced graphics modes, the Shifter was redesigned to cope with the extra colour palettes. The TT, on the other hand, uses a completely separate Shifter chip, which is based on a chip produced by the National company, to generate the monochrome display known as 'TT High'.

A RIGHT LOAD OF TOS



The Operating System (TOS) is the part of your ST that runs the whole show. The ST's operating system connects and manages the complex hardware, and provides an interface from that hardware to GEM, the graphical user interface we all know and er, love. The very first version, TOS 1.0, was loaded from floppy disk; the ST only held a small section of the operating system in ROM. This was known as a 'bootstrap', and was used to load TOS from disk. TOS 1.0 also appeared as ROM chips on the motherboard, as has every version since then.

Because of the different hardware used in Atari's range, TOS is supplied on different chip configurations. All versions up to and including TOS 1.4 (Rainbow TOS) were 192K in size and appeared on either two or six chips. STE TOS (versions 1.6 and 1.62) filled 256K and appeared on two chips, as did the range know as Mega STE TOS, which finished with TOS 2.06. Version 3, which was created for the TT, was supplied as a set of four chips totalling 512K, and the Falcon's TOS 4 finally made it on a single 512K chip.

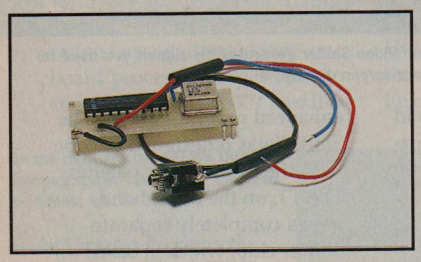
The quick fix

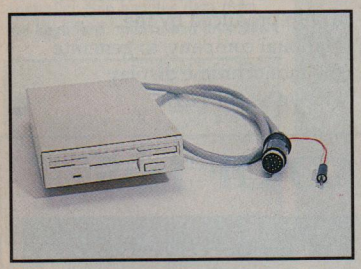
Repairs, upgrades and crushed ST's, Dave Escott deals with them every day at The Upgrade Shop.

Over the last two years, The Upgrade Shop has grown from a tiny business into one of the major suppliers in the ST market. Dave Escott, the proprietor, and his meagre staff work very hard to make The Upgrade Shop and its research company TUS Developments the success that it is. As Dave says: "Our aim is to make The Upgrade Shop the simplest and most cost effective answer to all ST related problems or upgrade needs.

"We like to offer a door to door service, so that all people have to do is to package up their computers properly and we do the rest. The machines are picked up by our couriers, brought to us, then returned to the customer as soon as the work is completed."

As well as mail order, TUS offers a full while-you-wait service by appointment. Simple repairs and upgrades can often be completed within two hours, just time for you to look round nearby Macclesfield town centre.





Fitting an external or internal high density floppy drive can make a big difference to the way you use your ST. The heart of the upgrade is the tiny, high density drive module designed by Dave Escott.

Repairs

Everyone wants his computer back as quickly as possible, so we asked Dave how important a quick turnaround of repairs was to him.

"Obviously I like to get things back to the customer as quickly as possible, but there is the question of cost to be considered. It is possible to do a blanket repair to a computer by replacing every part related to the problem.

"This would be rather costly and wasteful, so I prefer to test each machine carefully and locate the exact cause of the problem, which may mean replacing just one component instead of quite a few. This means we can save the customer money and give a good level of service."

DON'T DO IT...

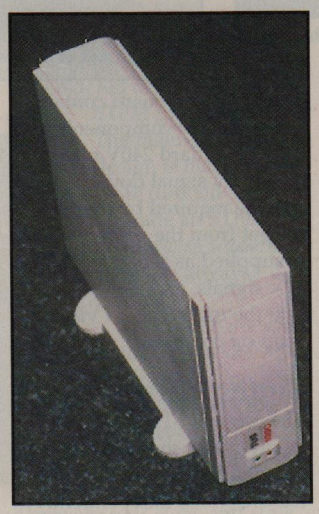
If you've ever soldered an audio plug successfully, you may feel tempted to have a shot at repairing your ST when it goes wrong. Obviously many people do just this, because The Upgrade Shop's shelves are laden with the results. The simple truth is that, unless you really know what you are doing with electronics and understand in detail the way your ST works, you will probably end up creating more problems than you solve. Something can look very simple, but often turns out to be more complex than you thought.

As Dave Escott of The Upgrade Shop says, "Much of the work we do involves cleaning up what others have done. People who delve inside their ST's without the proper knowledge usually end up causing damage. A typical example is someone not realising that a chip is soldered to the board and trying to remove it as if it is a socketed chip. The result is a cracked chip and, quite possibly, a hole in your circuit board."

TUS Developments

When Dave's not fitting and selling upgrades, he's busy designing them. He prides himself on coming up with ideas that are original, or provide a more elegant way of approaching a problem.

An example of this is TUS's new TOS 2.06 upgrade, of which Dave is rightly proud. "People are unwilling to solder inside their ST's, and they're not keen to take the internal shielding off. Initially, all TOS upgrades required switching between the fitted TOS ROMs and the new ones, so some soldering or clipping had to be done.



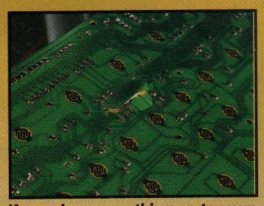
A hard drive truly transforms the way you work and can make your ST seem more powerful than ever. The Upgrade Shop produces sturdy and reliable drives at a budget price.

"We eclipsed the problem by simply using both sets of ROMs on the same, external chips. The upgrade can then be fitted without removing the ST's shielding, and the only remotely hard part is fitting the switch on the side. Even so, some people prefer to have it fitted professionally, but electronics hobbyists will find it a piece of cake to fit."

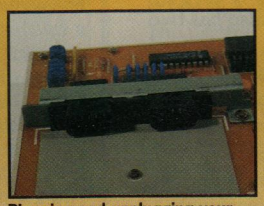
But what does he find most difficult about the design process? "Almost as hard as designing the upgrade is designing the instructions. My years of experience on the telephone, giving support, has taught me what people need to know and I try, as far as possible, to deliver it." *stf*

COMMON ST FAULTS

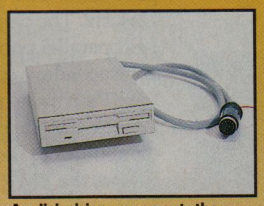
The most common fault on an ST is a broken power supply. This is a component which you can replace yourself providing you have some very detailed instructions.



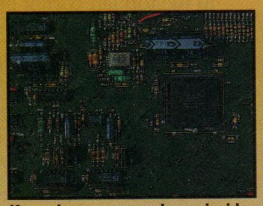
If you drop something on to your ST from above or lean on it too heavily, the keyboard's printed circuit board is pierced by a support located directly underneath it.



Plugging and unplugging your joystick and mouse will weaken the solder joints on these ports. As soon as your joystick starts to misbehave you should get the ports resoldered.



As disk drives wear out, the heads can go out of alignment. Sometimes the metal cover on a floppy disk fails to close properly and literally pulls the drive head off as it is removed.

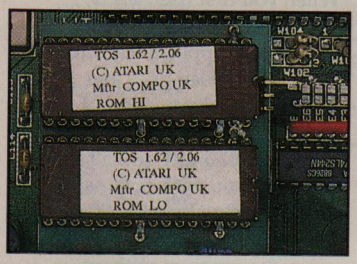


If you have a screw loose inside your ST, it's important to remove and secure it immediately. If it ends up on the legs of a chip like this, it can short out the chip and literally blow it up.

THE IMPORTANCE OF PACKAGING

If your ST needs to be upgraded or fixed, it's imperative that you use substantial packaging. Otherwise, it will end up needing more repairs than you bargained for. The Upgrade Shop uses special insurance to cover items in transit, but damage claims are not accepted unless there is at least 5cm (2 inches) of packing all the way around your ST and the whole thing is in a sturdy cardboard box. If you use your ST's original packing, make sure you reinforce the bottom with some tape as it is liable to burst open. You will be liable for any damage done to your ST if it is not correctly packed.

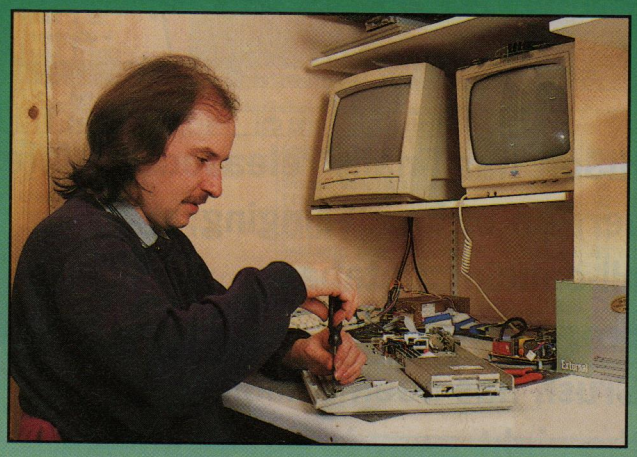
Dave Escott mentioned one individual who chose to use no packaging at all. "When the courier arrived he simply unplugged his ST and handed it to him. He thought that a courier pickup meant that packaging was included. Another person put his computer in a plastic carrier bag and sent it off. More often, a cardboard box is used, but with insufficient packaging, leaving the ST prone to damage once again. A computer is a delicate piece of electronics, it is a wonder that people don't treat them with a bit more consideration."



The revolutionary TUS Developments TOS upgrade board is remarkable because it holds both TOS 2.06 and TOS 1.62 on the same chips. Fitting is easier than any other TOS upgrade ever produced.

A DAY AT THE UPGRADE SHOP

The Upgrade Shop is a busy place, the phone constantly rings with people wanting to place orders or receive advice on how to use equipment they've purchased. There are often deliveries of stock items to be dealt with, and even people calling in the hope of having their ST mended or upgraded on the spot. In between this stream of phone calls, though, Dave and co follow a schedule that looks something like this...



Another faulty STe gets checked out at The Upgrade Shop.

9.00am Open the postbag.
9.30am Draw up a list of items which have to be dispatched today.
9.45am Ring the courier for the day's collections.
10.00am Transfer all new orders to the computer database.
10.30am Decide what upgrade and repair work needs to be done today.
12.00pm Repair and upgrade work on machines.
1.30pm Lunch (if there's time).
3.00pm Packaging items for the courier pick-up.
4pm The courier arrives to pick up the day's packages.
4.15pm Prepare postal items to go out. (Invoices, smaller upgrades, etc)
5.00pm Get everything to the postbox.
8.00pm Dave's evenings are devoted to product development, and testing or writing software.

AT YOUR SERVICE

All the prices stated do not include fitting or postage unless stated.

The Upgrade Shop
37 Crossall Street, Macclesfield, Cheshire, SK11 6QF
☎ 01625 503448

While you wait service: yes (by arrangement)
Type of post used and cost: courier pickup £7, return £7
STE upgrade to 1Mbyte: £7.50 (inc postage)
STE upgrade to 2Mbyte: £42.50 (inc postage)
STE upgrade to 4Mbyte: £82.50 (inc postage)
TOS 2.06 upgrade: £47.99
Replacement power supply: £32.99
Replacement internal floppy: £39.99

Analogic
Unit 6, Ashway Centre, Elm Crescent Kingston-Upon-Thames, Surrey KT2 6HH
☎ 0181 546 9575

While you wait service: yes
Type of post used and cost: courier pickup £7.05, return £7.05
STE upgrade to 1Mbyte: £9.95
STE upgrade to 2Mbyte: £49.95
STE upgrade to 4Mbyte: £99.95
TOS 2.06 upgrade: £54.95
Replacement power supply: £24.95 exchange, £49.95 new
Replacement internal floppy: £39.95

System Solutions
Windsor Business Centre, Vansittart Road, Windsor SL4 1SE
☎ 01753 832212

While you wait service: yes
Type of post used and cost: courier pickup £10, return £10
STE upgrade to 1Mbyte: £18.95
STE upgrade to 2Mbyte: £59.95
STE upgrade to 4Mbyte: £109.96
TOS 2.06 upgrade: £69.95
Replacement power supply: £39.95 (Atari)
Replacement internal floppy: £59.95 (Atari)

FAST Atari Repairs
144 Tanner Street, Tower Bridge London SE1 2HG
☎ 0171 252 3553

While you wait service: yes
Type of post used and cost: courier pickup £6.50, return £6.50
STE upgrade to 1Mbyte: £10.99
STE upgrade to 2Mbyte: £58
STE upgrade to 4Mbyte: £116
TOS 2.06 upgrade: n/a
Replacement power supply: £25.50 exchange unit
Replacement internal floppy: £39

First Computer Centre
Unit 3, Armley Park Court Stanningly Rd. Leeds LS12 2AE
☎ 0113 231 9444

While you wait service: phone and check
Type of post used and cost: courier pickup £11, return £5
STE upgrade to 1Mbyte: £9.98
STE upgrade to 2Mbyte: £59.98
STE upgrade to 4Mbyte: £119.96
TOS 2.06 upgrade: n/a
Replacement power supply: £39.99
Replacement internal floppy: £49.99 (Atari)

Ladbroke Computing
33 Ormskirk Road, Preston Lancashire PR1 2QP
☎ 01772 203166

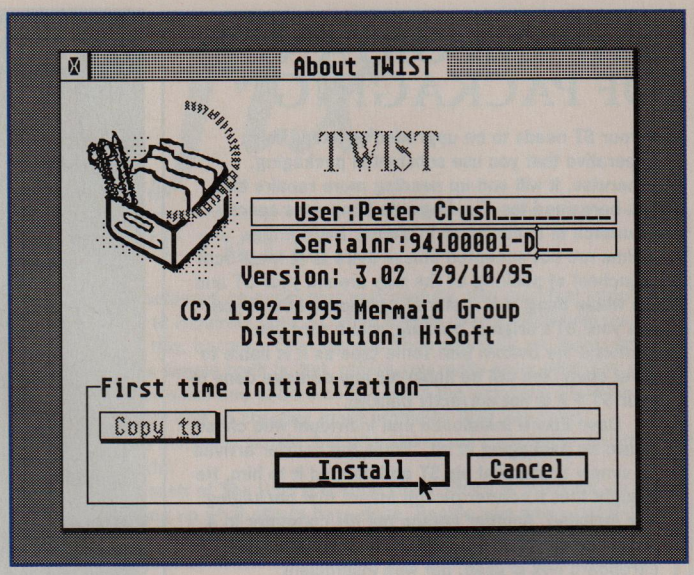
While you wait service: same day service (£15 surcharge)
Type of post used and cost: Parcelforce pickup £11, return £7
STE upgrade to 1Mbyte £4.99
STE upgrade to 2Mbyte £44.99
STE upgrade to 4Mbyte £89.98
TOS 2.06 upgrade: £65
Replacement power supply: £29.99
Replacement internal floppy: £19.99

Compo
Unit 3, Green Farm, Abbots Ripton, Huntingdon PE17 2PF
☎ 01487 773582

While you wait service: yes (by prior arrangement)
Type of post used and cost: Courier Return £10
STE upgrade to 1Mbyte: £9.99
STE upgrade to 2Mbyte: £45
STE upgrade to 4Mbyte: £90
TOS 2.06 upgrade: £39
Replacement power supply: £39
Replacement internal floppy: £39

Twist 3

HiSoft has finally released the latest version of its all-singing, all-dancing database program, and Peter Crush has been twisting the night away in anticipation.



An interesting database program may sound like a contradiction in terms, but HiSoft's *Twist* manages to be just that. In issue 65 we reckoned version 2 was ideal for business use, and so we awarded it 83%.

Version 3 has been in preparation for quite some time, so we couldn't wait to try it. It comes on a double-sided disk, and you get both the original version 2 manual and a smaller 32-page supplement which covers all the new features. These additions are described in the 'New features' panel on the facing page.

When you first use *Twist 3*, you may be surprised by its stark appearance

Is *Twist 3's* interface too simplistic, or clear and uncomplicated? It all depends on your point of view.

Cue music

Twist 3 is from the Mermaid Group, the Danish programmers who wrote the multi-purpose Accessory, *Harlekin*. *Twist 3* works on any ST, STE, TT or Falcon with 1MByte of RAM and a double-sided disk drive. We recommend you use it with at least 2MByte of memory and a hard drive though.

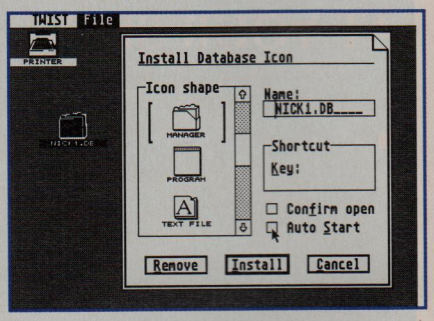
Twist 3 has been coded to take advantage of *SpeedoGDOS* or *NVDI*, enabling you to use Speedo or TrueType fonts in place of the usual ST system font. This means you can use fancy text, in sizes of your choice, both on-screen and in your printouts.

In common with most modern applications, you have to run an installation program before you can use *Twist*. It's all fast and easy: the installer simply creates the required files and writes them to your chosen destination, which can be either a floppy disk or hard drive. Note that the original master disk isn't copy-protected, so you should make a working copy before installation, saving the original as a back-up in case of accidents.

Cue lights

When you first use *Twist 3*, you may be surprised by its rather stark appearance, but don't let its clean lines and simplicity fool you – lots of features are hiding behind the scenes. *Twist 3* just doesn't bombard you with options until you actually need them.

You could probably start using the program without



Icons for your data files can be placed on *Twist 3's* desktop to give you easy access to them.

TERMINOLOGY

There now follows a short Open University-style film entitled "Getting to Know about Database Programs".

The opening scene is a busy magazine office at the West Country headquarters of Futuristic Publishing. The camera zooms in to a large leather-topped desk where tough, cigar-chomping editor (played by Karen Levell) is carpeting a mild-mannered reporter. "I don't want any more of your excuses, Peers. I want results! Why can't I ever find features or reviews when I need them? Get out of my sight, and don't come back until the whole thing is sorted."

As Nick backs out, bowing and scraping, a BBC2-type voice-over says: "What Nick needs is a DATABASE PROGRAM. It will help him to organize all the information needed quickly and efficiently. Let's see how he sets one up."

Scene shifts to Nick in front of his trusty ST as he muses. "Hmm.., I'll need to set up a reviews FILE using my favourite database program, *Twist 2* (this is an old film, remember). I think this file should include all the reviews and articles ever done in *ST FORMAT*. That'll please the editor, then perhaps she won't be quite so beastly to me."

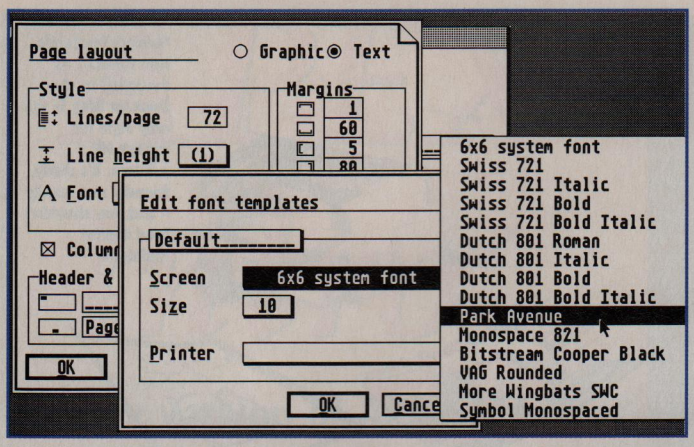
Nick flicks through the back issues in deep concentration, but how can he sort it out all out?

Cut to bearded professor wearing flared brown corduroy trousers (played by Frank Charlton) who wisely counsels: "Nick will have to set up FIELDS to contain his information. Each field will contain a different type of data, so there will be one field for the name of the item reviewed, a field for the number of the issue it was in, and perhaps another field for the score it received. You can have as many fields as you want in your file". Film speeds up as Nick types furiously, entering 78 issues of *ST FORMAT* in about ten seconds of screen time. Mops brow, and SAVES all the data on to hard drive, with a backup copy on floppy disk.

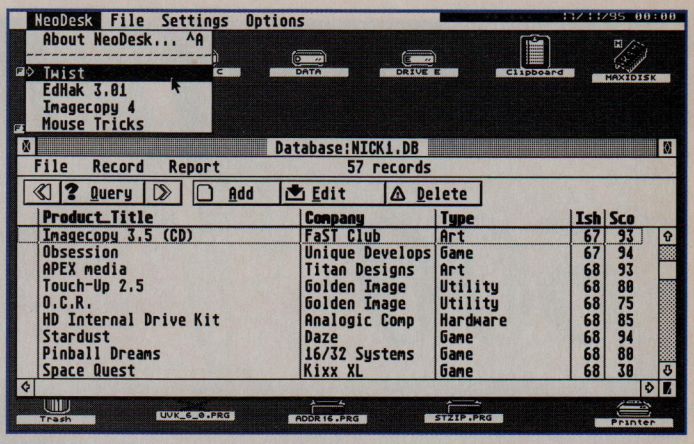
Next scene opens with Nick dropping a jiffy bag into the postbox; voice-over says: "Now the data is safely on disk, it can be sent to another person who has the database program, enabling them to use it on their computer too". Nick posts the disk to ace freelance reviewer (played by Peter Crush. He could send it by modem, but the film needed a colourful street scene).

Peter loads Nick's data, SEARCHES for particular products, and generally finds it all jolly useful. He even uses some of it in his review, taking all the credit in his usual crafty manner. Karen gives Peter a pay rise and sends Nick off to make the coffee. Roll credits, film fades out to music of *Twisting The Night Away*.

(Editor's note: all characters portrayed in this film are entirely fictitious. Especially Nick.)



If you've got *SpeedoGDOS* or *NVDI* you can use alternative and attractive fonts throughout *Twist 3*, which means you can spuce up your reports with ease.



Wow, you can run *Twist 3* as an Accessory. You can even use the *Chameleon DA* loader to install it after you've booted up.

studying the manual, but it's worth working through its 140-odd pages. Fortunately it's very easy to read, with none of the usual confusing database-style jargon about fields, records and so on. If anything, it could be criticised for a slight lack of technical detail.

The manual gets straight to the point with an easy-to-follow tutorial, which is probably the easiest way to learn what the program can do. However, more experienced users can go straight to the particular section they need, thanks to the comprehensive index, which is a common feature of all HiSoft's products.

Twist 3 takes a modern, graphical approach to everything with non-modal dialog boxes and attractive pop-up menus. Creating, editing or modifying a database, such as adding or changing fields and their contents, selecting new fonts and so on, couldn't be easier. It's also easy to create reports of your data, which can be viewed on screen, saved to disk or printed out.

Creating, editing or modifying a database couldn't be easier

Cue dancers

Twist 3 is easy and fun to use, and you can't say that about many databases. Its user friendly nature hides its true power, though - it's fully relational, and ready for most, if not all, tasks.

It's very similar to version 2, so existing users should find adapting to the latest version easy, especially as files created in either version of the program are totally compatible.

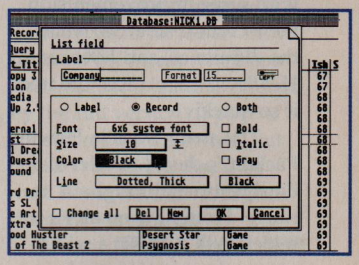
Twist 3 is an improvement on previous releases, and the extra features make upgrading well worthwhile. Perfect for home or business use. *stf*

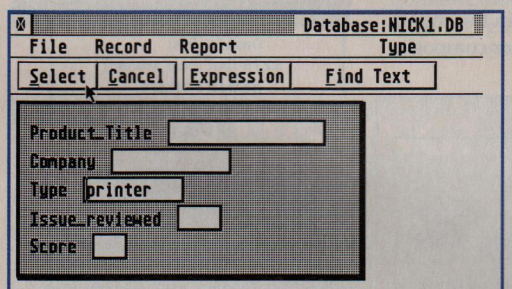
PETER CRUSH

NEW FEATURES

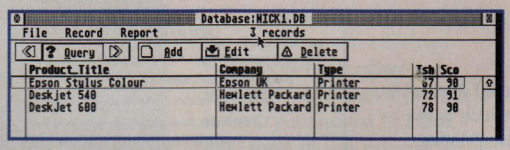
- *Twist 3* can be run as an Accessory, which is handy if you need to look up data while using another GEM-based program.
- It is *MagiCMac* compatible, so you should be able to run it on an Apple Mac computer (assuming you have *MagiCMac* – see issue 77 for a full review).
- It now offers high-quality printed output through *SpeedoGDOS* or *NVDI*, and can print address labels in columns.
- 'User-definable dialog boxes' enable you to set up *Twist* so that a dialog box appears before the query string (entered in reports, updates, mailmerge, import and exports operations or simply before a predefined query is performed).
- The document editor has acquired an extra graphic printing capability, and can be switched to graphics mode. This enables rulers, *GDOS* fonts, selectable point sizes, tags and a different page size dialog to be used in your databases. Files saved by the editor contain extra information which enables it to select the correct mode when the file is reloaded.
- A direct search option has been added.

Double-clicking often enables you to edit and adjust all kinds of details. Who said *Twist 3* was too simple?





1 (Left) Want to find the printers reviewed? Enter 'printer' in the right box, and click select.



2 *Twist 3* searches the file and lists all the printers discovered. In this case, we found three models in a small example file.

Product: Twist 3
Price: £89.95 (upgrades available)
Contact: HiSoft
Tel: 01525 718181
Min System: Any 1MByte Atari

IT'S ALL RELATIVE

Databases are either relational or flat-file. As a rule, relational databases are more powerful, while flat-file databases are easier to understand.

The term 'relational' refers to the ability to link information between files. Going back to our *ST FORMAT* Reviews database (see the Terminology panel), you could set up a database for all the reviews, and a second one for the companies involved. The Companies database could include details of their head offices, phone and fax numbers, contact names and other relevant information.

Instead of having to type all the information about, say, Hewlett Packard every time you enter one of its printers in the Reviews database, you can link the two files together. In this way, information about HP can automatically appear in all files relating to its products in the other database. You can't do this with a flat-file database, which produces one-dimensional files that cannot have links.

Twist 3 is a relational database, making it more powerful and flexible than other packages. However, making the most of this feature requires a little planning before you set up your data. See *STF* 68 for a tutorial on linking two databases together.

VERDICT ● STF VERDICT ● STF VERDICT

Twist 3

HIGHS
- Slick and modern
- Intuitive in use

LOWS
- Manuals insufficiently detailed in some areas

In short...
Twist 3 is now the best ever database program for the Atari. We think so, anyway.

90%

DeskJet 600

Hewlett Packard's new fashion, as modelled by the DeskJet 600, is the only style for today's HP printers. It's diddy, friendly and cuddly – and you shouldn't feed it after midnight.

Another month, another Hewlett Packard inkjet. Peter Crush performs a level one diagnostic on the new, low-cost DeskJet 600.

Variations on a theme seems to be the phrase whispered in the corridors of Hewlett Packard's HQ at the moment as the DeskJet 600 replaces the six-month old *FORMAT* Gold-winning DeskJet 540 (*STF* 72, 91%).

The new inkjet shares the previous model's updated, modern shape, and the mechanism under the bonnet is essentially the same – albeit with some improvements on the technical side. So, what's the difference, and how come Hewlett Packard has updated it so quickly?

The answer lies in Hewlett Packard's desire to offer standard features throughout its range. From now on all its inkjets will support a wider range of paper sizes and media, and offer colour capability. So, while the 600 is actually a monochrome machine, you can, at any time, take out the black cartridge and snap in the colour one, which is offered as an optional extra.

Rich inks

The pigment-based black ink used in its latest printhead cartridges provides a richer black with smaller, more defined dots, while the dye-based colour inks offer vibrant colours that dry quickly. The new printheads are also slightly different to the older ones, which won't fit this new inkjet. Another major feature is the increased monochrome resolution of 600 x 600dpi.

You need to supply your own parallel cable, but everything else you need, including the mains power unit, black ink cartridge and first-rate manuals, is there. If you want to print in colour you can buy an optional kit for about £35.

Like most modern printers, the 600 has very few controls buttons – just the one, in fact. This simplifies operations, but prevents you from adjusting anything directly. All you get is an on/off switch and a button to form-feed the paper. The built-in sheetfeeder is pretty nifty, with adjustable guides that accommodate almost any size of paper.

Also included in the 600 bundle is a set of floppy disks containing *Windows* and *DOS* printer drivers and control software. Naturally, these are rather redundant on an ST, so you need to ensure you have a suitable DeskJet driver to get the best out of the machine.

The DeskJet 600 is a slick performer, cheaper and smaller than before, but with all the features you want. It's quiet, speedy and the cyan, yellow and magenta ink in the colour kit produce a better composite 'black' than the muddy, dark brown produced by previous models. If you need a mono inkjet this is a great buy, and you can turn it into a colour printer for just £35 more. *stf*

PETER CRUSH

TECH SPECS

Weight: 5.3kg
Size: 436mm x 199mm x 405mm
Power: 12 watts when printing, 4.5 watts during standby
Resolution: 600 x 600dpi black text, 300 x 300dpi colour
Built-in fonts: Courier, CG Times, Letter Gothic and Univers – all available in various point sizes, styles and pitches
Media handling: Built-in automatic sheetfeeder handles 100 sheets of all common sizes; up to 20 envelopes may be loaded at a time; custom sizes are also possible; labels, cards and transparencies can be used too
Printer language: HP PCL Level 3
Connection: Parallel printer port

Product: DeskJet 600
Price: £275 (but shop around)
Contact: Hewlett Packard
Tel: 01344 369222
Min system: All STs, parallel cable

ON TRIAL

Text output

To evaluate the 600's text output we used *Protext 6* with the DeskJet 550C printer driver, which is the 'nearest' one *Protext* currently supplies. Printing was fast: about 40 seconds for our test page of 60 lines with the black cartridge, and two minutes using the colour printhead. *Protext* also had no problem using the 600's built-in fonts.

So you've got your ST complete with Wordprocessing, Graphics and Desktop Publishing programs, but sooner or later you will want to get those masterpieces you have created off the screen and onto paper. To achieve such "hardcopy" you need a Printer, in fact over 60% of ST FORMAT readers have already splashed out their hard earned dosh buying one, and nearly 30% are planning to get one soon! A printer the most essential hardware accessory for your ST, but buying the right one can be a daunting task. Unfortunately, there were only a couple of choices when it came to buying a printer, a dot matrix or daisywheel! Anything else was simply too dear, or hadn't been invented! But that has all changed, suddenly daisywheel printers have virtually become extinct, even though they do produce first rate quality. Blowing them out have been Laser printers, with rapidly falling prices making them more affordable, and the new breed of inkjet printers. Humble dot matrix printers are still around, but as the lasers and inkjets get cheaper, the days could be numbered! With dozens of makes on the market, and each manufacturer producing many models, there are hundreds to choose between. To find the correct printer for your needs you must have the best information, and in this special feature all the leading machines are examined. Plus details on Printer Drivers, colour printing, technical hints and tips, what ST software gets the best results, it's all

Graphical output

***PageStream* and its printer driver were used to check the 600's graphical output. Printing an A4 advertising poster took only two minutes, including the time to compose and send the image from the ST. The output was close to laser printer quality.**

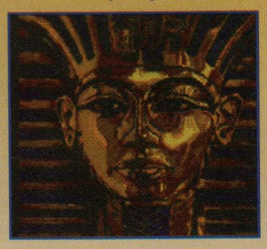
FOOD AVAILABLE INCLUDES:

* Freshly barbecued burgers, hot dogs and chicken with salad, relish, sauces etc.
* Filled rolls, Tea and Coffee, Cakes and Buns etc.
* Home made Punches, and a selection of other drinks
* Lemonade, Coke, and fruit drinks for the kiddies
* Plus Ice Cream, Popcorn, Sweets and Crisps

All items will be on sale individually and at reasonable prices (but we want to raise some money)! You eat and drink as much or as little as you want. Just bring yourself along!

Colour output

We used *Imagecopy 4* set at Best quality to test the printer's colour output. As you can see, the printed pic of King Tut was quite impressive. We used the three-colour printhead (no real black ink) and all the tests were done on white copier paper.



STF VERDICT

DeskJet 600

HIGHS
- Three year warranty
- Excellent printed results
- Optional kit converts it to colour

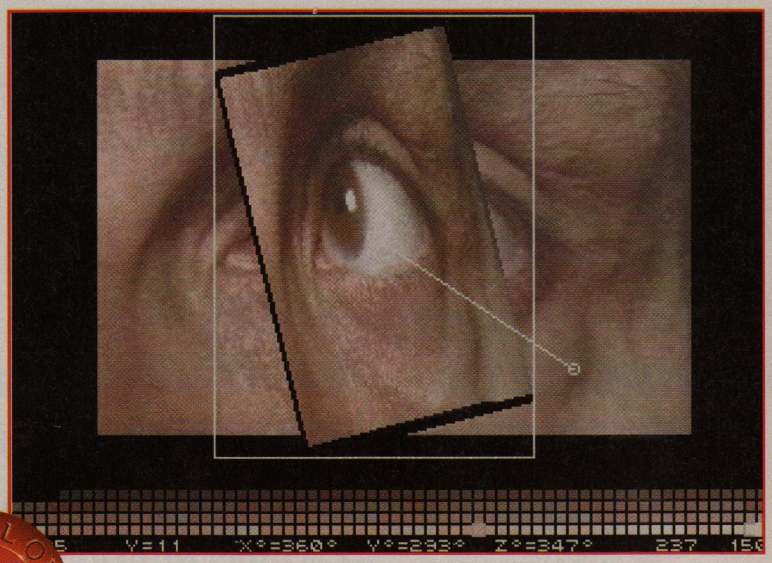
LOWS
- Has no user controls or dip switches

In short...
With the right software this budget-priced printer will give you superb results.

91%

APEX Intro

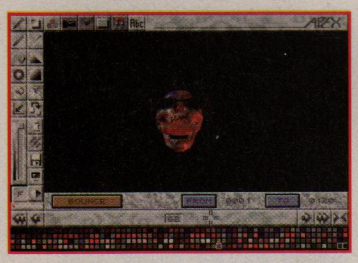
A baby version of *APEX Media* for only 40 quid? Surely it can't be much cop – or can it?



APEX Intro offers some of the best block-handling tools we've seen in any art package.

When Black Scorpion's excellent art package and animation suite *APEX Media* was originally released, we happily awarded it 93% and the coveted *ST FORMAT* Gold award. Since then, it has been upgraded numerous times, and the price has dropped, too. Nevertheless, Titan thought some of us might like to play with the superb drawing and animation tools without lashing out for the full program – hence the 'streamlined' *APEX Intro*.

APEX Intro is essentially the same as its big brother, minus four of the studios (see the What's Missing? panel for details). Once these features have been removed – especially the superb Morphing Studio – you might expect to be left with a rather dull entity. Far from it. *APEX Intro* is an excellent Falcon art package in its own right, with a very usable animation studio to boot.



The superb animation system would be well worth £40 on its own.

Doodles

Everything which made *APEX Media* a superlative art package is still there. The brilliant colour handling, great drawing tools, and fast DSP-based cel tools for block manipulation are still there. Just like *Media*, *Intro* can twist, rotate and otherwise smoothly manipulate portions of your image at a blistering pace, thanks to efficient use of the Falcon's DSP chip.

> *Intro* can twist and rotate portions of your image at a blistering pace

All of *APEX Media's* conventional animation features are present, too. You still have full control over the powerful animation engine, and the animator can still load sequences from other machines and packages. The industry-standard FLI and FLC formats are catered for, as well as the older SEQ files from the *Cyber* series. Even without the powerful morphing tools, *APEX* is still the fastest, easiest and best animation system you can use on your Falcon.

Good value

So, is *Intro* worth forty of your hard-earned coins? We say yes, without hesitation. It may not offer the real-world art tools of *Rainbow 2*, but it's still a very impressive art package. The full animation suite is absolutely brilliant, and worth the price of admission alone.

There's a lot of power here, and you can easily move up to *APEX Media* when you need the extra features offered by the full version. If you've considered *APEX* before, but couldn't afford it, you'd be mad not to take advantage of this new version. *stf*

FRANK CHARLTON

UPGRADING INTRO

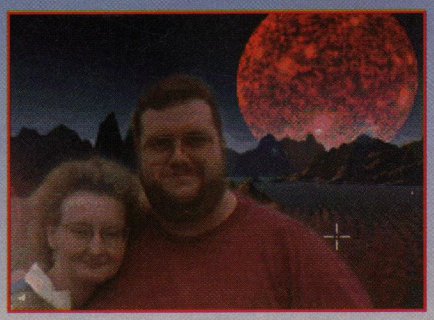
Titan offers a stupendously good deal when it comes to upgrading your copy of *Intro* to the full version of *APEX Media*. Simply send in your *Intro* master disks, along with a cheque for £60, and you'll soon be the proud owner of the full package.

Upgrading brings the total price to £99.95 – exactly what you'd pay for *APEX Media* in the first place – so *Intro* is almost a 'try before you buy' version. Furthermore, you've got *Intro* to play with while you save up for the upgrade.

WHAT'S MISSING?

Titan prefers to call *Intro* a 'streamlined' version, rather than a cut-down one. So, what's been shaved off in the process?

Digitising Studio: Only useful if you own Titan's Exposé or Compo's Screeneye video grabber cards, so it's no big loss for most of us.
Film/Image Filters: Again, this studio is only really useful for post-processing digitised video sequences.
Nonlinear Drawing: *Intro* doesn't have the analog colour masking tools. You also lose some of the nifty drawing tools, such as the realistic airbrush.
Morphing Studio: *APEX Media's* impressive morphing tools are gone.



If you want to use these image distortion and transformation tools, you'll have to upgrade to *APEX Media*.

Product: APEX Intro
Price: £39.95
Contact: Titan Designs
Tel: 0121 6936669
Min system: Falcon030

STF VERDICT

APEX Intro

HIGHS
- Superb value
- Easy to upgrade

LOWS
- You jest, surely?

In short...
An ideal introduction to Titan's superb Falcon art package – buy it now.

96%

The Jaguar past, present and future

Frank Charlton brings you up to date on the current Jaguar scene, while Stuart Campbell lines up the ten best games released so far.

Get yourself a Jaguar and you'll be at the cutting edge of video game technology for the next five years. It's an offer too good to resist..." Or so we said in issue 55, nearly two years ago.

A lot of water has flowed under Atari's bridge since then – flooded under, some would say. Two years is enough time to measure the staying power of a games console, so where are we now with Atari's brilliant 64-bit wonderchild?

Well, the Jaguar itself is still here, still in the shops, and still selling. Then again, so are the doddering old 16-bit consoles like the Sega Mega Drive and the SNES, so that's no big deal. No, the way to find out whether the Jaguar has lived up to its potential is to take a hard look at what's past and what's yet to come...

The hardware

As with any computer technology, a games console needs to be updated and added to if it's to survive in a rapidly changing industry. Sega squeezed extra life from the aging Mega Drive by adding new peripherals, such as the MegaCD and the 32X add-ons. With a clear two-year head start on the rest of the industry, what has Atari done to advance the Jaguar cause?

Er, not a great deal, actually. The much-awaited CD-ROM drive was first announced when we ran news stories of the Jaguar's impending release – back in issue 55 again. It was launched in the USA earlier this year, and is now slowly appearing in the UK shops. Even now, though, you'd be forgiven for not knowing that it's out there, since Atari seems to think that advertising ranks alongside mugging old ladies and stealing lollies from babies...

The virtual reality headset was also mentioned in the birth announcement. Promising a headset was a brave move for a relatively small video game company like Atari, and many industry pundits thought it would never happen. As it turns out, they could well be right. Atari has backed out of its deal with UK pioneers Virtuality, for reasons which still aren't clear (see page 11). Atari UK's Darryl Still recently confirmed that the Virtuality deal had been dropped, but enthused that a Jaguar-based virtual reality system was still a strong possibility.

The software

No-one shells out for a new and untried game system unless there's some pretty startling software to back it up. Atari took the plunge and included 3D space game *Cybermorph* with the Jaguar, at a time when other manufacturers plumped for more predictable platform or 2D shoot-'em-up affairs.

While Sega and Nintendo consistently evolved their bundle deals to include new

FIGHT FOR LIFE

Atari's much anticipated vector beat-'em-up *Fight For Life* is doing just that – and struggling. Recent restructuring at Atari US has resulted in the game being placed on "indefinite hold". This is a pity as, judging by the screenshots we've seen, it was shaping up nicely.

Next month we'll be talking to Atari president Sam Tramiel, and you can bet we'll be asking what happened to *Fight For Life*. We'll also be covering the recent staff layoffs at Atari, Atari's commitment to the Jaguar, and why it abandoned the computer market. Don't miss it.

ATTACK OF THE MUTANT PENGUINS

An odd-sounding game to be sure, but it looks like being one of the most colourful and amusing Jaguar games ever.

HIGHLANDER

Based on the animated TV series rather than the cult movie, this is another CD-only release. It has excellent 3D polygon characters and boasts extensive digitised video and audio sequences from the original cartoon.

THE JAGUAR CD

We mentioned the infamous CD-ROM add-on back in issue 55, when we covered the launch of the Jaguar. The long-awaited drive is just starting to appear in the shops, but is it too late? Will it enable the Jag to compete with new consoles from other manufacturers? Is it any good? What are the games like? All these questions need answering, and we'll be doing so very soon in an in-depth review.

The Jaguar CD is a plug in CD-ROM drive with a double-speed mechanism. The design hasn't changed much since we saw the first publicity shots: it still sits on top of the Jaguar, and the flip-up lid still makes it look like an expensive matt black toilet.

The standard pack includes four CDs:

- ***Blue Lightning*, an *Afterburner* lookalike, developed from the original game for the Lynx hand-held;**
- ***VidGrid*, a puzzler featuring swanky full-motion video footage of rockers like *Aerosmith*, *Metallica* and *Van Halen*;**
- **A demo CD featuring the atmospheric graphic adventure *Myst*; and**
- **Er... the audio soundtrack to Tempest 2000. Fine if you like techno music, we suppose.**

Jeff Minter's *Virtual Light Machine* is built into the drive. It's a sound-to-light convertor which analyses any normal audio CD you play and generates weird stroboscopic fractal visuals to go with it. The impression we get from speaking to Jag CD owners in the USA is that the VLM is everyone's favourite part of the CD bundle. Let's hope Nick doesn't break it with his *Magic Roundabout* soundtrack...

THE NEW BREED

Unless you've spent all year playing *Obsession*, you'll have already been assaulted by ads for the 'next generation' of games consoles. Ignoring Nintendo's Ultra 64 (no one has seen one yet), the two machines the Jag has to climb into the ring with are the Sega Saturn and the Sony PlayStation (PSX). They're both 32-bit machines, they both make use of CD-ROM technology, and they're both more expensive than the basic Jaguar setup. So how does Atari's black box compare with these young upstarts?

Processing Power: Like the ST, the Jag contains a Motorola 68000 chip, but it isn't the main CPU – despite what other mags may have said. The Jaguar uses the 68000 for 'housekeeping' tasks, while the main power is provided by two custom-made RISC chips, nicknamed Tom and Jerry. Both the Saturn and the PSX use RISC technology of comparable power.

Graphics: Both the Jaguar and Saturn graphics engines deliver a maximum resolution of 720x576, while the PSX provides 640x480. All three use a TrueColour display which provides 16.7million colours.

Sound: While the Jaguar offers 16-bit CD-quality stereo (even without the JagCD), the Saturn and PSX claim to provide 24-bit stereo sound.

CD-ROM: All three next generation consoles line up equally with double-speed CD-ROM drives capable of delivering data at 300K/s. The Saturn and PSX come with the drive as standard, while Jag owners have to buy their unit separately.

Bundles: The Saturn is available as a base unit with no game, or as a bundle with *Virtua Fighter*. The PSX doesn't come with a game, but you do get a CD of playable demo versions.

Marketing: No contest. Atari loses every time, thanks to the aggressive ad campaigns from Sega and Sony.

games (the Mega Drive was launched with the awful *Altered Beast* before a certain blue hedgehog arrived), Atari has stuck with *Cybermorph* throughout. Rumours abounded about an *Alien vs Predator* bundle, but it never appeared. Here at *ST FORMAT* we think that Atari needs a serious rethink in this department if the Jaguar is to move ahead.

With the launch of the Jag CD and some long-term projects finally coming to fruition, it seems Atari is finally coming up with a steady flow of quality titles. It may be a while before we see some of these titles in the UK, but take a peek at the screenshots along the bottom of the page to see what's coming.

We're also eagerly anticipating *Defender 2000*, Jeff Minter's updated 64-bit version of the stonking Williams arcade classic. *Tempest 2000* was excellent, so the world is waiting with baited breath for this killer.

Atari has a lot more titles either ready for release or still in development. Titles such as *Myst*, *Commander Blood*, *Iron Soldier 2*, *Primal Rage*, *Fever Pitch Soccer* and *Phase Zero* are all slated for release at either the end of this year or the first part of 1996. Some ST and Falcon games are heading for conversion, too: the superb space shooter *Zero-5* is in the wings, as is a CD version of Silmarils' epic space adventure *Robinson's Requiem*.

Couple all that with 'will they, won't they?' releases such as the money-spinning *Mortal Kombat 3* – listed by Atari as "in development" – and you can see there's a lot to look forward to. If Atari continues along these lines, it'll be well-prepared for the console war to come.

BALDIES

Not a game starring Clive and myself, despite what Karen may tell you. *Baldies* is a conversion of the hugely popular Amiga title, and it looks and plays like a cross between *Lemmings* and *Civilization*. The objective is to increase your army of follically-challenged chaps and take a crack at ruling the world.

BATTLEMORPH

This sequel to the game we all own is another CD title, and it follows on from the original. It features yet more FMV sequences, and expands the *Cybermorph* universe to include underwater or even underground travel. If it plays as well as it looks, this could be a stormer.

BATTLESPHERE

Not to be confused with the *Cybermorph* sequel, this 3D space combat epic looks a real stunner so far, with some superb texture mapped vector graphics. If you yearned for more complexity than *Cybermorph* offered, this looks to be the biggest contender.

Ten of the best

A games machine is no use without games, so here are Stuart Campbell's recommendations.

Tempest 2000

1 Tempest 2000

Not only the best Jaguar game ever, but almost certainly the best video game ever. This is not so much a game, in fact, as an all-out Stalingrad-scale assault on your senses, mixing eye-watering graphical fireworks and great sound with gameplay that'll have your heart pumping so fast you'll think there's a hyperactive Brazilian samba band inside your ribcage.

How good is it? When *Tempest 2000* came out, I spent £285 on a copy of the game and an imported US Jaguar. That's how good.

Even His Majesty Pete The Third, King Of The Stupid People, has bought *Tempest 2000*. Have you any idea what you're missing out on?

2 Doom

You really shouldn't need us to tell you about *Doom*, but it's worth pointing out one last time that Jaguar *Doom* is still the best incarnation of the game to date. Tweaked, improved and the new levels run as quickly and smoothly as all but the fastest £1,600 PC can manage – and certainly as fast as you could ever need. The much-maligned (and rightly so) Jaguar pad makes a far better job of the controls than you'd ever have expected.

The game itself is a cast-iron blood-and-guts classic that's still more than a match for the countless clones that have sprung up in its wake, and the awesome network Deathmatch option is the icing on a cake that's already big enough to hide three strippers and a donkey.

3 Iron Soldier

At heart a simple shoot-'em-up, *Iron Soldier* nonetheless has a feel all of its own. It puts you in control of a huge robot the size of a ten-storey building, with a mission to obliterate everything in sight. Clomping around looking down at the view between your huge robot feet as you stomp all over tanks and small family homes is uniquely entertaining, and you begin to see why King Kong felt the way he did.

Wolfenstein 3D

4 Wolfenstein 3D

Largely (and wrongly) ignored since *Doom* appeared on the scene, *Wolfenstein 3D* is still worthy of attention, and not just because it's *Doom's* daddy. A cleaner, simpler game than its offspring, *Wolfenstein* packs in the maximum amount of senseless carnage with the minimum amount of distracting puzzle-solving and comes up with a highly evocative game. It's rather less claustrophobically scary than the illustrious follow-up, but the graphics are crisper and don't make your eyes go funny and your head hurt after four

Doom

Iron Soldier

Syndicate

Alien Vs Predator

hours of non-stop playing, which is always a boon.

5 Alien vs Predator

This doesn't match up to either *Doom* or *Wolfenstein* in the gameplay department. However, what it lacks in cunning design it makes up for in atmosphere. I've played loads of *Doom* games, but meeting one of those eyeless aliens in *Alien vs Predator*, scampering at you in that trademark way, is more scary than anything else you've ever seen in a game. In real life too, probably.

And I still have to turn away from the screen whenever one of my Colonial Marines cops it from a face-hugger. Honestly.

6 Syndicate

Set in an all-too-plausible near future where the world is run by sinister global corporations, *Syndicate* puts you at the head of a team of four cyborgs armed with a device known as the Persuadatron (ulp), with which you can brainwash other game characters. If that doesn't work, just blow their heads off with a rocket launcher.

The Jag gets the original, sinister Amiga/PC version too, rather than the kiddied-up one seen on other consoles, and if you're not scared after playing *Doom*, *Alien vs Predator* and this, you're probably a cyborg already.

7 Theme Park

The games so far released for the Jaguar have been, in many ways, a bit of a throwback to the old days of games consoles. Shallow arcade-type titles have been very much to the fore, and we've seen very little of the strategy/RPG/puzzle/weird Japanese stuff released for other machines. Or the good platform games. That's not necessarily a bad thing, but sometimes it's nice to have a bit of a break and play a sim game like *Theme Park*.

Theme Park puts the fun back into building up a simulated business, but without losing any of the demanding strategy. At the moment it's number one in a category of one, but it's going to be a long time before something comes along to topple it.

Theme Park

8 Cybermorph

It was never going to be the kind of killer game that sold the machine on its own, but *Cybermorph* is still an underrated little game. Unearthly graphics make for an otherworldly atmosphere, backed up by lovely whooshy effects and that dreamy voice-of-your-ship speech, but the game is still the star.

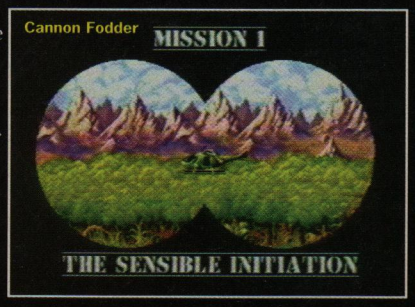
Cybermorph mixes exploration and all-out blasting in an engaging setting. The difficulty curve is just right too, from the gentle introductory levels to the terrifying fire-fights that'll take every ounce of skill you can muster.

9 Cannon Fodder

In many ways reminiscent of *Syndicate*, this undisputed classic is a much more straightforward arcade shoot-'em-up. The graphics have been prettied up for the Jag, but without losing the much-loved tiny-figures that are Sensible Software's trademark. The joypad doesn't make for perfect control, but the gameplay is so entertaining and just plain gosh-darned lovable that you won't mind persisting with the controls until you get to grips with them properly.

10 Pinball Fantasies

It's pinball. But on the Jaguar. This is the second in 21st Century's long line of pinball sims, and it's one of the best. You get four tables, three of which are pretty good. The ball movement is convincing, and bouncy tunes keep you in the right frame of mind. You'll be hard pushed to find better pinball on any console, and for a small fee, 21st Century will send a big sweaty bloke round to stand behind you and shout: "The left ramp, hit the left ramp NOW!" Good stuff.



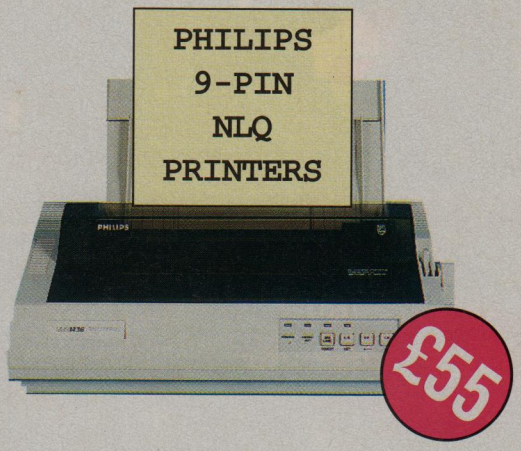
Cannon Fodder

Cybermorph

Pinball Fantasies

"HOW MUCH?"

£99



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ELITE 2 **12.99**

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D/S requires double sided disk drive
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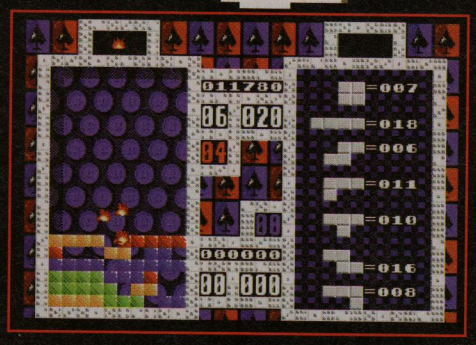
Win a Jaguar!

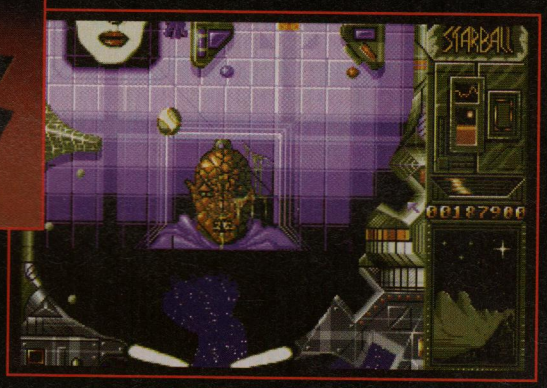
Write an ST game and win a Jaguar console or up to £100-worth of software courtesy of LAPD, our PD Library of the Year.

If reading about all those brilliant Jaguar games has left you panting for a 64-bit console of your own, here's your chance. Thanks to LAPD we have a Jaguar console, plus £175-worth of software, to give away. To stand a chance of winning, you need to create a stupendous game that runs in colour on any ST. Try to be as daring, imaginative and original as possible.

Once it's complete, put it on a virus-free floppy disk and send it with a completed entry form, full playing instructions and information about how the game was created to the address shown below.

You have until **Thursday 29 February 1996** to get your entries in. We'll pick out the best three games from all the entries – the winner will receive a Jaguar, while those placed second and third will be able to choose £100- and £75-worth of PD and shareware respectively, all courtesy of LAPD. So, what are you waiting for? Get coding!





This is a selection of games from LAPD's shareware and licenceware range. Can you write a game that would sit proudly among them? There might be a Jaguar or £100-worth of software in it for you!

TERMS AND CONDITIONS

1 The game must be free of any copyright infringements (sampled sound and graphics must have documented permission if used).
2 The finished game must not require any hardware add-ons other than the usual joystick and/or mouse.
3 The author must be prepared to release the finished game into the market, either as public domain, shareware or licenceware.
4 All PD and shareware entries may be distributed in the general market place.
5 The Editor's decision is final. There are no cash alternatives. Employees of Future Publishing and LAPD are not eligible to

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Please complete this form and send it, along with your new game, playing instructions and information about how the game was created, to: *ST FORMAT* Jag Compo, LAPD, PO Box 2, Heanor, Derbyshire DE75 7YP. The closing date is Thursday, 29 February 1996.

Name: .....

Address: .....

.....

Game title: .....

Type of game (adventure, shoot-'em-up, etc): .....

Language used (68000, STOS, etc): .....

The program named above is all my own work. I agree abide by the terms and conditions outlined above and agree to indemnify LAPD and Future Publishing against any legal action should copyright problems arise.

Signed: .....

Date: .....

(We cannot accept entries unless you sign the above declaration)

1995 and all that...

As we wave a fond farewell to 1995 and prepare to greet the new year, Nick Peers looks at 12 months in the Atari scene, announces the winners of the 1995 Reader Awards and peeks around the corner at the treasures in store for 1996...

It's been an interesting year for the ST and Falcon. Two new TOS-based machines – GeSoft's Eagle and C-Lab's Falcon Mk2 – have been released, and while the games scene has contracted sharply, independent companies such as UDS and Impact have released some truly gob-smacking games.

At the more serious end of the spectrum, Compo, HiSoft and System Solutions have produced a steady stream of excellent software. Hardware specialists Analogic and The Upgrade Shop also had a busy year: new monitors, TOS upgrades, hard drives, CD-ROM units and accelerator cards all made appearances.

Meanwhile, the FaST Club, Goodmans, LAPD and Floppyshop ensured that even the most specialist needs were catered for. Thanks to their inexpensive commercial products and rapidly expanding PD and shareware catalogues, a wide range of low-cost software is readily available.

Like the rest of the industry, *ST FORMAT* also felt the bite of ST users defecting to other machines. Nevertheless, we remain dedicated to keeping you up to date and showing you how to get the most out of your machine.

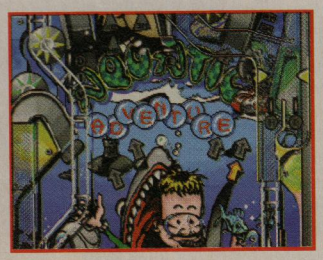
1996 should be another intriguing year, but for now, let's sit back in our comfy chairs, sherry in hand, and reminisce about the year that was 1995.

Fun and games

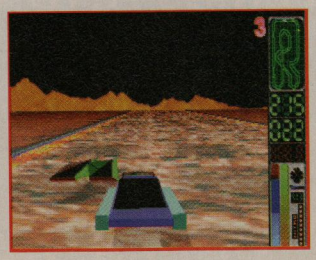
The year dawned brightly for STE and Falcon owners with the release of *Zero-5*. This superb 3D shoot-'em-up was the first of a 'new wave' of games that used the enhanced hardware of these machines. Reviewed in issue 66, it immediately set new standards for machine-specific titles by securing an *ST FORMAT* Gold.

Table-tilting fanatics got a double helping of fun during the spring as UDS's *Obsession* and 16/32's *Pinball Dreams* battled it out for the title of pinball wizard. *Obsession* won by a street, its crisp graphics and realism proving an addictive combination. *Pinball Dreams*, the first of 16/32's Falcon-only titles, was less impressive: 21st Century, the game's coding team, saved its best efforts for other machines.

Stardust took the classic *Asteroids* genre and gave it a good shaking in March. The game's eye-popping graphics and slick gameplay boosted the STE's emerging reputation as a serious games machine. Other STE-only releases, including *Team*, *Ultimate Arena* and *SubStation*, followed later in the year as game programmers got to grips with the new technology. *Team* was the first football game to knock the



Obsession: colourful and realistic.



Moon Speeder: fast Falcon action.

THE GAMES OF 1995

● ST/Falcon				
Alien Thing	Top Byte	£19.99	68%	75
Brenarvarious	Top Byte	£8.99	25%	71
Catacombs of the Undead Sorcerer	Merlin	£7.99	35%	73
Championship Manager Italia '95	Domark	£24.99	70%	70
Hollywood Hustler	Desert Star	£24.95	75%	69
Ishar 2	16/32 Systems	£12.95	90%	70
Obsession (STE/Falcon)	UDS/Merlin	£24.95	94%	67
Shadow of the Beast 2	Psygnosis	£12.99	80%	69
Space Quest	Kixx XL	£9.99	30%	68
Spellbound	Psygnosis	£19.99	40%	68
Stardust (STE/Falcon)	Daze	£25.99	94%	68
STarioland	Top Byte	£19.99	85%	74
SubStation (STE/Falcon)	UDS/Merlin	£24.95	75%	72
Super League Manager	Audiogenic	£29.99	85%	72
Team (STE/Falcon)	Impact	£24.95	94%	72
Tessera	Dolphin	£5	79%	71
Their Finest Missions	Kixx XL	£14.99	65%	66
Ultimate Arena (STE)	STeam	£15	86%	74
Zero-5 (STE/Falcon)	Caspian	£24.99	92%	66
● Falcon-only				
Double Bobble 2000	Shareware	£10	96%	77
Evolution Dino Dudes	16/32 Systems	£24	81%	77
Gravon	Access Info	£35	64%	75
Ishar 3 CD-ROM	System Solutions	£59.95	70%	76
Killing Impact	Merlin	£29.99	85%	77
Moon Speeder	Merlin	£29.99	79%	73
Pinball Dreams	16/32 Systems	£24	80%	68
Ping 2000	Merlin	£19.90	60%	71
Robinson's Requiem CD	System Solutions	£59.95	72%	76
Steel Talons	16/32 Systems	£24	83%	73
Towers 2	Goodmans	£19.95	93%	70

classic *Sensible Soccer* into orbit, while *Ultimate Arena* proved that the STE could easily handle the likes of *Mortal Kombat*. *SubStation* was more disappointing, but it did show that classic blasters like *Doom* are at least possible on the STE and Falcon.

In the closing months of 1995 the Falcon gained some excellent platform-specific games, boosting its reputation in the leisure arena. *Moon Speeder* (which will soon spawn a sequel) offered Falconeers a slick racing game set in a superbly rendered lunar landscape, while *Killing Impact* took another classic idea, *Joust*, and brought it bang up to date in an addictive game of giant jet hoppers. Interestingly, a *Killing Impact* clone has yet to appear on any other platform, computer or console. Finally, the Falcon-specific *Towers 2* and *Double Bobble 2000* proved that shareware is still a breeding ground for quality releases.

The STFM also demonstrated that it is still capable of supporting lively, colourful and playable games. *Alien Thing*, *Super League Manager*, *STarioLand* and *Hollywood Hustler* all made appearances as the year progressed. Within the games scene, 1995 was a year of quality, if not quantity.

Stardust: eye-popping *Asteroids* clone.

Ultimate Arena: Mortal Kombat thump-alike.

Killing Impact: giant jet-hoppers.

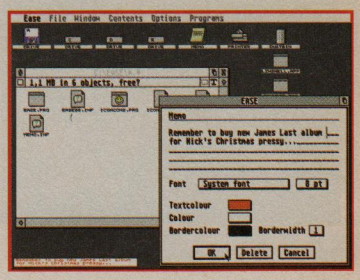
Seriously speaking

Once again, 1995 demonstrated that the ST can easily take the strain of serious use. The number of releases may have dropped over the past 12 months, but a quick glance at the Serious Software panel (page 38) proves that all we've lost is the dross and the also-rans. After all, there's really no merit in having six packages to choose from if four of them are rubbish.

The ST graphics scene was fairly quiet this year, although the perennially popular *Imagecopy* continued to improve with every update. Falcon owners, on the other hand, benefited from two exciting releases. *APEX Media* began the year with a bang, turning the '030 wonder machine into powerful graphics workstation and scoring a massive 93% for its trouble. August saw the release of Addiction Software's *Rainbow 2*, a powerful art package with sound and animation studios, which astonishingly, proved even better than *APEX*.

After the flurry of word and document processor releases in 1994, no-one was especially surprised when things quieted down in 1995. Still, Arnor's cessation of trading didn't prevent Compo from releasing *Protext 6.6*, and very nice it was too.

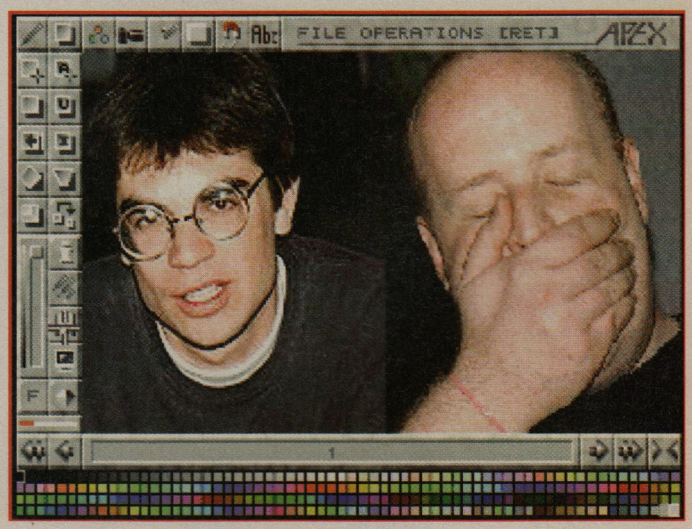
Things were far busier on the music side. The Atari remained very much the musician's choice, courtesy of C-Lab's re-packaging and re-release of the Falcon. We also saw the long-awaited update of *Cubase Score*, plus a number of digital recording systems for the Falcon, including Harman's own *Cubase Audio 16*. There was even a new budget-priced sequencer: *Sweet Sixteen* may not have all the features of *Notator* or *Cubase*, but it offers a higher level of performance than most entry-level packages.



Ease: user-friendly replacement desktop.

OMEn: cross-platform operating system.

It was a quiet year for programmers, although a new operating system, *OMEn*, did appear in late autumn. The new system makes it possible to produce software that may ultimately be compatible with other platforms, including the Mac and PC. At least, that's the theory; whether *OMEn* will take off on the other machines is highly debatable, and these doubts resulted in the rather unconvincing score of just 67% in issue 75. On the bright side, *Sprite Works 2*

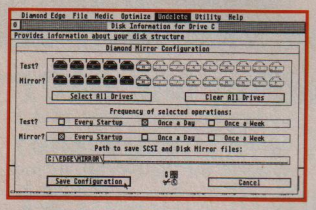


APEX Media: turn your Falcon wonder machine into a powerful graphics workstation.

Twilight: colourful animated screensaver.

made games programming in *GFA Basic* more straightforward by making it easier to add graphics and sound to your *GFA* creations.

Software upgrades proved as popular as ever in 1995.



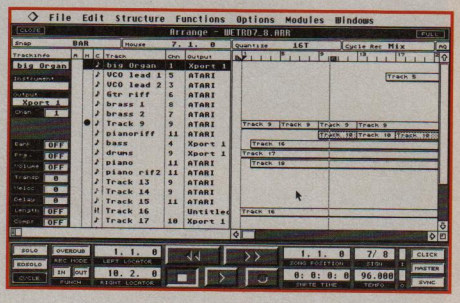
Diamond Edge: help for hard drives.

System Solutions led the way with the latest version of its excellent screen accelerator *NVDI*. It also gave non-TOS 2.06 owners a user-friendly desktop in the form of *Ease*, which, along with *MagiC* and *Kobold*, provides a stable suite of multitasking programs for those power users unconvinced by Compo's *Geneva* and *NeoDesk 4* package.

The number of specialised utilities available for the ST continued to increase this year. The never-ending war against viruses received an inoculatory boost with the release of the latest version of *Ultimate Virus Killer*. *Diamond Edge 2* and *Hard Disk Driver* made life easier for hard drive owners, and *OCR* and *Touch Up* beefed up scanning set-ups throughout the land. *The Thought!* ideas processor was also given a well-received update.

CD-ROM software finally began to make its mark on the Atari scene in 1995. Although many discs were essentially just PD and shareware collections, a number of more specialised titles did appear. The most important release for CD-ROM owners, however, was System Solutions' *ExtenDOS Pro*, the latest and most stable software interface. *SARA* was also intriguing, but while its ability to run certain PC CD-ROMs on a Falcon (or an ST with a graphics card) is promising, it needs further development.

If you were looking for an attractive screensaver, JCA Europe's *TwiLight* more than filled the bill. Finally, Apple Mac users were given a fighting chance to run Atari programs at fantastic speeds with *MagiC* emulator *MagiCMac*.



Cubase Score: long-awaited sequencer update.

BOOKS

Atari A to Z	Linnhe Computing	£12.50	91%	73
Cyberspace for Beginners	Icon Books	£7.99	85%	70
Practical MIDI Handbook	PC Publishing	£8.95	50%	69
Music Reference Book	PC Publishing	£12.95	81%	72
Sequencer Secrets	PC Publishing	£6.95	80%	69
Signal and Image Processing with Neural Networks	John Wiley and Sons	£36.95	80%	70
UVK Book	Douglas Comms	£15	55%	77

SERIOUS SOFTWARE

Art and Graphics

Art for Kids	Goodmans	£24.95	90%	66
Grafix	Top Byte	£19.95	52%	73
Imagecopy 3.5	FaST Club	£34.95	93%	67
Imagecopy 4	FaST Club	£34.95	94%	75
Metamorphosis 24	16/32 Systems	£80	70%	66
Outline Art 3	JCA Europe	£99	85%	69
Quill 2	CGS Computerbild	£29.99	81%	67
Vector Graphics XChange	FaST Club	£14.99	76%	73
● Falcon-only				
APEX Media	Titan Designs	£119.95	93%	68
Rainbow 2	JCA Europe	£69	96%	73

Word processing and DTP

Calamus Font Set	JCA Europe	£7.50	89%	75
Calamus SL update	JCA Europe	£69	90%	69
Fonty	FaST Club	£11.95	86%	76
Mastering Calligrapher	FaST Club	£24.95	80%	75
Mastering Papyrus	FaST Club	£26.95	83%	75
Protext 6.6	Compo	£74.95	90%	76

CD-ROM

Astronomie and Jupiter	ROTH EDC	£72*	92%	72
Crawly Crypt 1 and 2	16/32 Systems	£27* each	83%	74
DTP Grafiken 1,2 and 3	Xware	£35 each	91%	72
Lohrum 3	System Solutions	£24.95	93%	72
Maxon CD 1	MAXON Computer	£23*	85%	72
Maxon Demo CD	MAXON Computer	£12*	83%	72
Mega Archive Volume 2	System Solutions	£24.95	88%	76
Mission 1	Xware	£23*	89%	72
Oxyd Magnum	Dongleware Verlags	£45*	95%	72
SARA for Grolier	16/32 Systems	£45	60%	76
STE Power CD	Compo	£24.99	89%	66
Whiteline Alpha	System Solutions	£39.95	93%	72
● Falcon-only				
Transmission CD-ROM	System Solutions	£29.95	80%	76

Music and MIDI

Cubase Score 2	Harman Audio	£449	90%	73
MIDI Hacker	Profile Entertainment	£9.95	82%	74
On Stage	Hands On	£39.95	92%	74
Sweet Sixteen	Hands On	£59.95	79%	74
Twiddly Bits Drums	Keyfax	£19.95	81%	73
Twiddly Bits Guitar	Keyfax	£19.95	92%	73
● Falcon-only				
Audio Tracker	System Solutions	£159	82%	74
Cubase Audio 16	Harman Audio	£799	90%	73
Digital Tracker	16/32 Systems	£49	90%	74
MUSiCOM 2	Compo	£79	81%	73
TrakCom	Compo	£79	83%	73

Programming

Interface 2	Compo	£49	90%	72
OMEn and the Developers' Kit	Floppyshop	£20/£12	67%	75
STOS Extra 3	Top Byte	£4.95	77%	69
Sprite Works 2	Ninth Wave Software	£7	90%	74
X-Debug	FaST Club	£24.95	83%	66
● Falcon-only				
BBS-Debug	Titan Designs	£39.95	89%	68

Utilities

Bitzcopy	BITZ Computers	£10	68%	70
Boot Sector Installer	Intercom Media	£5	3%	76
Diamond Edge 2	HiSoft	£49.95	94%	74
Ease	System Solutions	£49.95	97%	69
GT Look 2	System Solutions	£120	85%	77
Hard Disk Driver	System Solutions	£19.98	93%	70
NVDI 3	System Solutions	£49.95	97%	71
OCR	Golden Image	£49.95	75%	68
Touch Up 2.5	Golden Image	£35	80%	68
UVK 6.6	Douglas Comms	£12.95	94%	77
View 2	FaST Club	£14.95	90%	66
● Falcon-only				
Outside	16/32 Systems	£69	89%	71

Miscellaneous

ExtenDOS Pro	System Solutions	£29.95	92%	71
Thought! 2.2	Titan Designs	£79.95	90%	72
TwiLight	JCA Europe	£29.95	88%	76
Video Supreme 2	Goodmans	£29.95	90%	70
● Apple Macintosh-only				
MagiCMac	System Solutions	£149	75%	77

* Approximate price

Hardware stores

The big news of 1995 was the launch of two Atari clones. GeSoft's Eagle was repeatedly previewed, but has yet to cross the channel. Although it houses a very fast TT-clone, the new machine's most impressive quality is its flexible motherboard, which, in theory, supports a wide range of upgrades. Gasteiner hopes it will be available in the UK within the next few months.

C-Lab's Falcon Mk2, distributed in the UK by Digital Awareness, was released this summer. It arrived towing a hefty price-tag, 14MByte of RAM and guaranteed compatibility with *Cubase Audio 16*. The Mk2, with its direct-to-disk digital recording, DSP chip and MIDI interfaces, was aimed specifically at musicians. However C-Lab soon realised that other users were also looking for Falcons and a cheaper model, the Mk1, was released without a hard drive later in the year.

On the whole, though, 1995's hardware race has been dominated by storage media, with everything from hard and CD-ROM drives to the revolutionary Zip drive battling for your cash. It's hard to pick favourites, but HiSoft's Squirrel quad-speed CD-ROM is a good buy if you're looking to join the CD throng. HiSoft is also handling the UK distribution of Iomega's Zip drive, a revolutionary storage device that enables you to store 100MByte of data on a single disk.

Brother continued to churn out printers throughout the year, and its lasers are now under £600. Those on a tight budget can still get reasonable speed and quality from the various inkjets, though.

High-speed modems were very much in vogue as many an ST owner upgraded his serial port to take advantage of the rapid transfer rates. Several high-speed devices are available, but for price and quality you can't do better than the Supra 288.

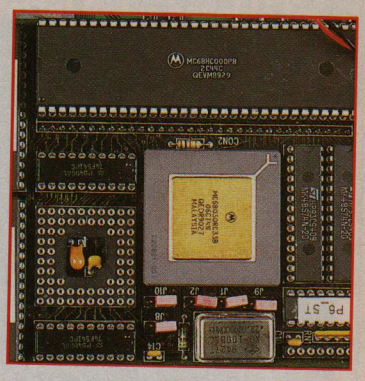
If it was April, you had to be buying the Pak 68/3, a breathtakingly fast hardware accelerator from System Solutions, while in November, The Upgrade Shop made it impossible for STE owners to resist the lure of TOS 2.06, with the easiest and cheapest switchable TOS upgrade yet. Forget soldering, forget awkward clips, TUS's TOS 2.06 option is a dream to fit.

Other new hardware enabled Falcon owners to harness the full power of the '030's sound and graphics hardware. Harman produced the most impressive 16-track digital recording system of the year with *Cubase Audio 16* – the hardware option includes an interface to link your Falcon to an external recording DAT machine. Meanwhile Titan Designs' repeatedly delayed Exposé video digitiser blew everybody away, enabling Falcon owners to view and grab moving images from

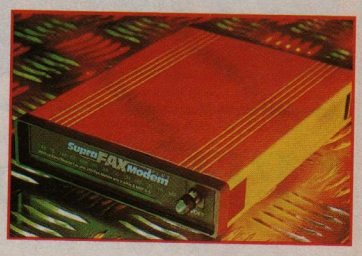
HARDWARE

Falcon Mk 2	**Digital Awareness**	**£1499***	**91%**	**72**
Floppy, Hard and CD-ROM drives				
Aiwa ACD-300 CD-ROM	HiSoft	£175	92%	76
Apple CD-300E Plus	Gasteiner	£279	95%	72
High Density Internal Drive Kit	Analogic	£59.95	85%	68
MaxiS 540MByte Hard Drive	System Solutions	£379	97%	70
Prima Hard Drive/CD ROM	First Comp Centre	£479.99	85%	70
Squirrel 4x CD-ROM	HiSoft	£259	96%	74
Squirrel Hard Drive	HiSoft	£318	92%	73
TUS Hard Drive	The Upgrade Shop	£264	85%	69
TUS High Density Module	The Upgrade Shop	from £58	92%	72
Toshiba XM-5301B	Koch Media	£204.53	95%	72
Modems				
Hayes Accura 288	Hayes	£292.58	88%	71
Hayes Optima 288	Hayes	£586.33	81%	71
Speedcom+	Siren Software	£109.99	84%	73
Supra 288	First Comp Centre	£233.99	94%	71
US Robotics Courier	First Comp Centre	£327.99	89%	71
US Robotics Sportster 288	First Comp Centre	£234.99	72%	71
Music				
Cubase Audio 16	Harman Audio	£1089	90%	73
The K.AT	Digital Awareness	£79	89%	74
Korg 05R/W module	Sound Control	£399	n/a	71
MM1 MIDI Expander	Digital Awareness	£299	75%	76
On Stage	Hands On	£79.95	92%	74
Roland PC200Mk 2 Mother Keyboard	Tech Mate	£165	86%	72
Soundpool MO4 MIDI Expander	System Solutions	£149	89%	73
Printers				
Deskjet 540 Inkjet	Hewlett Packard	£275	91%	72
Epson Stylus Colour Inkjet	Epson	£449	90%	67
HL-630 Laser	Brother UK	£528	90%	73
HL-660 Laser	Brother UK	£546.38	91%	75
Scanners and Digitisers				
Epson GT-Look 2	System Solutions	£799	85%	77
Expose	Titan Designs	£279	96%	75
Miscellaneous				
ArtPad (Wacom)	CGS Computerbild	£186.33	79%	74
Gemulator 4	FaST Club	£119	82%	75
Pak 68/3	System Solutions	£299	93%	70
STE TOS 2.06 upgrade	TUS	£49	92%	76
TUS 14-inch mono monitor	The Upgrade Shop	£89	80%	70
Universal Interface	InterFX	£25	65%	70

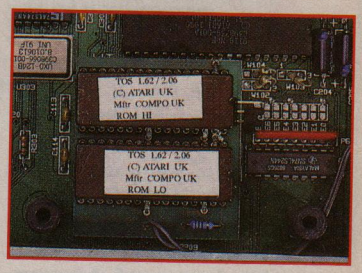
* Prices are approximate



Pak68: blisteringly fast accelerator.



Supra 288: impressively efficient modem.



TUS TOS 2.06: easily installed STE upgrade.

C-Lab Falcon: designed for musicians.

TUS 14-inch monitor: high res monochrome.

HiSoft's Squirrel quad-speed CD-ROM drive: the quickest in its field.

Asteroidia: Dave Munsie's slickly rendered take on the Asteroids theme.

PD action...

One of the best things about the ST is how inexpensive it is to run and maintain. If commercial software is out of your price range, you can always turn to the public domain for alternative programs that do the job you want, and often a lot more besides.

On the whole 1995 proved to be a mixed year for the public domain and shareware market. Gamewise, it was all a little disappointing – nothing matched up to the excellent *Starball* and *Dynabusters+* from 1994, although there were still a few gems. Dave Munsie returned with a vengeance, thanks to the likes of *Frantick, Square Off* and, more importantly, *Asteroidia*, his slickly rendered take on the *Asteroids* theme. Although overshadowed by the commercial, STE-only *Stardust*, *Asteroidia* earned important brownie points from STFM owners by running on all 1MByte STs.

We're still waiting to hear more about Dave's next two releases: *Megaspace* and *Choplifter '95* (or should that be *Choplifter '96*?). Still, if his record this year is anything to go by, they should both be well worth the wait.

Also worth mentioning are the Falcon puzzlers *Tautology 2* and *Switch*, which bounded their way into the hearts and fevered minds of '030 gamers everywhere. The ultimate accolade, however, must go to the ST-compatible *Skyduel*. This one- or two-player battle game combines arcade action with strategy to produce an addictive shoot-'em-down. The host of options ensures it will be some time before the game becomes stale, too.

The last 1995 game worth mentioning is *HERO*. It was originally a commercial game, but authors Tony Greenwood and Bob Goodfellow recently re-released it as freeware. Look out for their new project, *Timeslips*, in 1996.

...and PD choice

Serious applications continued to impress in 1995, with excellent shareware support and regular updates keeping the PD scene buzzing. The excellent hypertext reader *ST Guide* led the way, impressing PD aficionados everywhere with its ability to spruce up the online help documents accompanying major shareware and commercial applications.

Also impressive was the replacement desktop *Thing*. Although still officially under development, an early version (0.54E) was released this summer to much acclaim, despite the fact that it lacked some of the features planned for the full program. *Thing 0.54E* proved so competent that many are now using it as a low-cost alternative to *Ease*.

Owners of *MagiC* and *Geneva* celebrated the arrival of *Freedom*, a non-modal file selector that you can access without suspending other operations, making it perfect for multitasking. Elsewhere, *Selectric* comfortably confirmed its position as the premier file selector for the Atari. If you've got an older ST, this is one software upgrade you can't be without.

Graphics software continued to flourish, too. Version 3.8 reinforced *Speed of Light's* position as a top-class image processor and GIF/JPG file viewer. Other graphics programs that caught our eye were *MultiCAD, Award Maker Plus* and *Pixikrome*.

Disk magazines have made a lot of progress over the past 12 months too, with new user interfaces making it possible for each magazine to have a different identity. Our particular favourites included the two *Star Trek* magazines, *Novadisk* and *Warp*.

On a more serious note, user magazines for specific applications, such as the *3D Construction Kit (The Third Dimension)* and *Frontier: Elite 2 (POG)*, continued to provide valuable information on titles no longer supported by their publishers. General ST magazines, such as *Power* and *Maggie*, also kept up their sterling work throughout the year, building up cult audiences and deservedly flourishing.

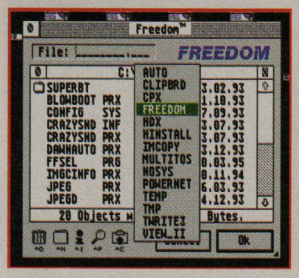
PD IN 1995

Top Ten PD Games of 1995

1	Tautology 2	AdLib	93%	76
2	Skyduel	Floppyshop	92%	75
3	Switch	Merlin	92%	76
4=	Pacman on Es 2	Power	90%	68
4=	Tomtar	Power	90%	68
4=	Bombzai	Comp. Dungeon	90%	73
7	HERO	Goodmans	88%	77
8	Conquest 2: The Viking Hordes	LAPD	87%	69
9	Asteroidia	LAPD	86%	72
10	Datachess 2	Floppyshop	85%	70

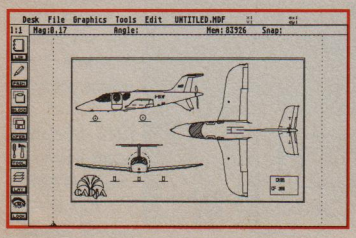
Top Ten PD Applications of 1995

1	ST Guide 1.3	Floppyshop	95%	73
2	GEMBench 4.03	HENSA	93%	72
3	Speed of Light 3.8	Cover Disk 72	93%	71
4	Warp 1/2	Keefy's PD	92%	70/73
5	Novadisk 6	James Bird	92%	71
6	MultiCAD	Floppyshop	91%	72
7	Award Maker Plus	Tumblevane	91%	66
8	Selectric 1.10E	Ad.Lib	91%	69
9	Egale 2.7	HENSA	90%	76
10	Freedom 1.1/1.14	HENSA	90%	71/74

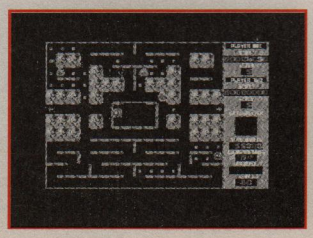


Freedom: non-modal file selector.

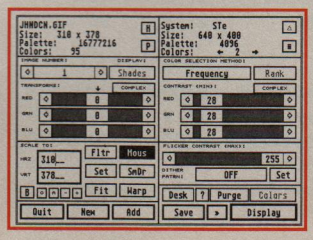
HERO: commerical release gone freeware.



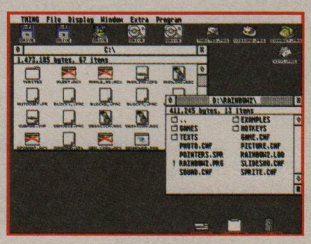
MultiCAD: computer-aided design made easy.



Pacman on Es: gobsmacking fun.



Speed of Light: top-class image viewer.



Thing: powerful replacement desktop.

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GM 01: Llamatron, Mega Blast
GM 05: Bermuda Race, yacht racing
GM 35: Pickpockets Slots
GM 40: Tennis
GM 60: Die Alien Blob, shoot-em-up
GM 69: Ozone, platform game
GM 87: Bar Games, pool, darts, crib etc
GM 97: Fatemaster, graphic adventure
GM 117: Grandad 2, graphic adventure
GM 124: The Klingon War, 1Meg
GM 133: Snacman, Pacman clone
GM 135: Dave Munsie Collection, 9 games
GM 137: MAX, mad platform game
GM 145: World Conquest, strategy
GM 151: Graveyard, shoot-em-up
ADV 28: A Night on the Town
ADV 32: Christian Adventure
ADV 40: Grandad, Graphic adventure
ADV 51: Three realms of Suspicion
GM 03: Backgammon
GM 27: Monopoly
GM 38: Pipe Perfect
GM 43: Mystic Well, RPG game
GM 64: ST Bridge, card game
GM 82: Smash Hit, tennis
GM 88: Hunt for Grey November
GM 101: Psycho Pig, 2 disks
GM 119: Insectroid
GM 129: Termatroid
GM 134: Starball, Pinball
GM 136: HMEC, Pacman clone
GM 138: 180 Darts
GM 148: Andromeda
ADV 09: Pork 2
ADV 31: Susan, text adventure
ADV 35: Deena
ADV 50: Black Dawn
ADV 55: The Pilot

ART & GRAPHICS

AAG 01: Palette Master
AAG 10: ST Cad, design program
AAG 22: Public Painter, mono
AAG 31: Metafile Objects, for Timeworks
AAG 35: Creative Titles, for video
AAG 47: Banners & Scrolls for Timeworks
AAG 55: Cosmic slide show
AAG 59: Movie Master, animation
AAG 61: HP Chrome, driver for HP Deskjet
AAG 06: Fractal Zoom
AAG 21: Picture Format Converter
AAG 29: Paintpot, 1/2 meg package
AAG 38: Crackart V1.36, English doc
AAG 53: Pad V2.4, clipart editor
AAG 54: Cosmic 4, pyschedelic art
AAG 57: Photochrome V3.0
AAG 60: Creative Titles 2, 1 Meg
AAG 67: Morphing Demo
Plus disk after disk full of clipart

MUSIC & MIDI

MUM 01: Accompianist, 16 voice sequencer
MUM 22: TX8IZ Yamaha Editor
MUM 53: Riff, create backing tracks
MUM 55: Yamaha SY22 Editor, mono 1Meg
MUM 58: Roland 'D' series Sound Banks
MUM 18: 1632 for DX/TX Yamaha
MUM 24: Alchime Jr, Sequencer + 200 tracks mono
MUM 54: Kawai K<>K4, Hi Res
MUM 56: Guitar Professional, learn those chords
MUM 63: Score Perfect - At last a score writing program which works in all resolutions 1 Meg

EDUCATIONAL SOFTWARE

EAC 01: Maths Test for under 10s
EAC 06: Shipwreck, maths cartoon
EAC 09: Chunnel, French/English
EAC 15: History File, 4 disks
EAC 19: Planetarium, sky at night
EAC 21: CIA World Factbook, info on over 240 countries (4 disk set)
EAC 29: Workout, a learning aid
EAC 37: GCSE higher grade maths tutor
EAC 46: The complete King James Bible, 4 disks of compacted files £7.00, or save yourselves almost 8 hours of pure hell de-compacting the files and get the 12 disk set for just £12.00
EAC 02: Body Search, anatomy game
EAC 08: Letter Bomber, recognition
EAC 11: Maths made easy
EAC 18: The World, quiz game
EAC 20: Telltale Chemisty, GCSE level
EAC 30: World War Two, a history 3 disks
EAC 40: Molsys, molecular modelling

WORD PROCESSING & DTP

WPD 01: ST Writer Elite, Wp
WPD 14: Calamus Manual, your 2nd manual
WPD 23: DB Writer, customised database
WPD 28: Font Master, GEM font designer
WPD 35: Marcelle, THE word processor
WPD 19, 22, 30: 3 disk set, Printing Press in English & German
WPD 03: Typing Tutor
WPD 16: Utilities disk for 1st Word
WPD 24: DB support disk
WPD 34: Jet-lope, envelope print for HP
WPD 37: Thats Write & Write On fonts

UTILITIES

UTA 01: Doc Displayer plus utilities
UTA 06: Fastcopy3 plus other copiers
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UTA 38: 5 Databases on one disk
UTA 48: Sagratan, virus killer
UTA 52: Food & wine menu maker
UTA 57: Astubank, personal accounts
UTA 02: Sticker 3, label printer
UTA 09: Address Book, store over 500
UTA 34: DB Master, your own database
UTA 40: Calamus Support Disk
UTA 51: 70,000 Word Spell Checker
UTA 53: German Translate, 27,000 words
UTA 58: Hard Disk Utilities

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Reader Awards 1995

The votes are in and counted, the gold envelopes are ready, and the suspense is unbearable... Welcome to the 1995 *ST FORMAT* Reader Awards.

Before we announce the winners, we'd like to thank all those readers who took the time to send or e-mail their votes. It took a long time to go through them all, but we've finally stopped seeing Reader Award forms before our eyes and can now get on with presenting the awards.

But first, we promised to give five lucky winners a year's free subscription, so well done to: Brian Ahern from Glasgow, Martin Kolesar of Kosice in Slovakia, Peter Godley from Sheffield, Victor Wootton from Wirral and Hakan Stenow from Surte in Sweden.

And now, without any further delay, cue music, cue lights, and on with the show...

Hardware

Aiwa's low-cost ACD300 scored 92% in issue 76, so it's not surprising that it walked off with the CD-ROM award, although the speed at which you have adopted it raised a few eyebrows.

The DIY Kit vote was more predictable, with memory and TOS upgrades streaking away from the pricier accelerators and graphics cards.

Gasteiner's Mega range of hard drives, which use Quantum mechanisms, beat off 13 other nominations to take the Hard Drive award, while the rise of STE and Falcon games that use the Jaguar Powerpad accounts for its popularity in the Input Device sector. Elsewhere, US Robotics dominated the Modem field, but there was fierce competition for the Monitors award.

No fewer than 19 models were nominated, but the Philips colour and Atari monochrome models took the honours comfortably in the end.

Star's LC printers attracted some support, but in the end Hewlett Packard edged out Canon's BJ range for the Printer prize. Finally, Cumana's external model won the Disk Drive award in convincing style, comfortably beating HiSoft's new Zip drive.

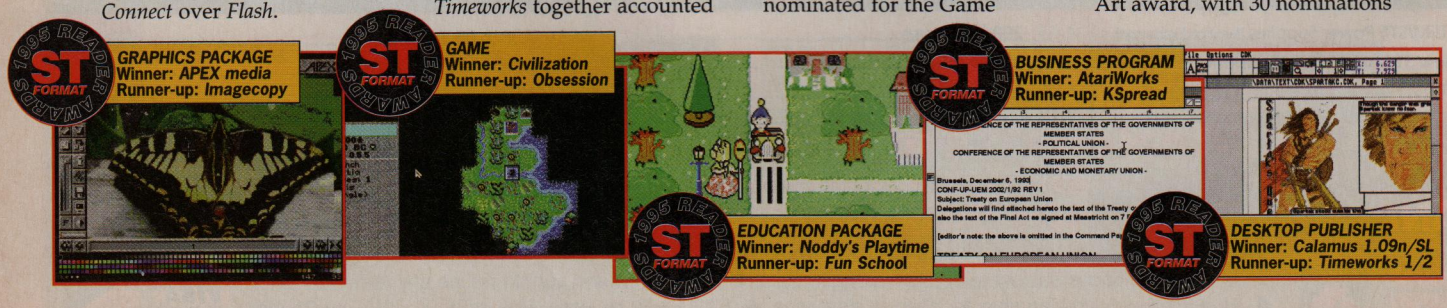
Software

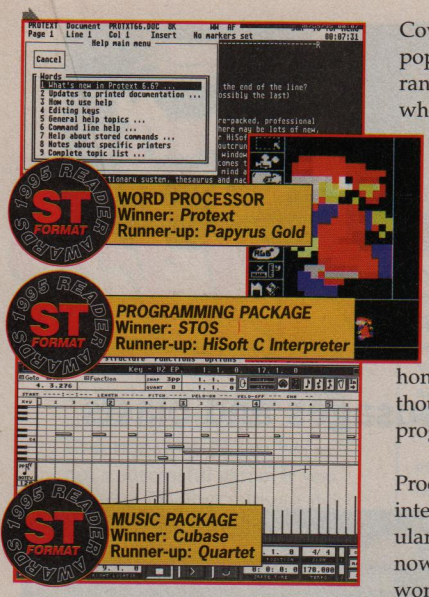
Despite all the excellent new software released in 1995, most awards went to older programs. HiSoft's *AtariWorks* managed to pip *KSpread* for the Business Program award, while Comms voters comfortably favoured *Connect* over *Flash*.

Although Compo's *Timeworks 2* has been upgraded to support *SpeedoGDOS*, *Calamus's* enduring popularity helped it edge out its great rival in the DTP market. Although seven packages were nominated in all, *Calamus* and *Timeworks* together accounted for 70 per cent of all the votes cast in this section. With only a couple of new learning packages released during 1995, the traditional favourite, *Noddy's Playtime*, found it easy going in the Education section.

No less than 39 titles were nominated for the Game award, but the winner proved to be the classic *Civilization*. 1995 releases put up a strong fight, though – UDS's *Obsession* held off *Stardust* and stablemate *SubStation* to claim runner-up spot.

It was a similar story in the Art award, with 30 nominations





battling it out for the Graphics Package title. Surprisingly, a Falcon-only package, *APEX Media*, stole the award from the more compatible *Imagecopy*.

Emagic's *Notator* didn't get a look in in the Music category, as its ancient rival *Cubase* claimed first prize from the old Cover Disk star, *Quartet*. The popularity of Harman's *Cubase* range was further emphasised when the Falcon direct-to-disk recording package, *Cubase Audio*, secured a comfortable third place.

Although *STOS* took the Programming award, the C language had two representatives in the final four – united you stand, divided you take minor honours. HiSoft fared well, though, with no less than three programs in the top four.

The final category, Word Processing, was also the most interesting. No-one was particularly surprised when *Protext*, now distributed by Compo, won a reasonably comfortable victory, but against all expectations HiSoft's *Papyrus Gold* edged out *1st Word Plus* and *Write On* for the runner-up spot. Even more remarkably, HiSoft's *Devpac Assembler* won a remarkable four per cent of votes cast in this section. Talk about versatility!

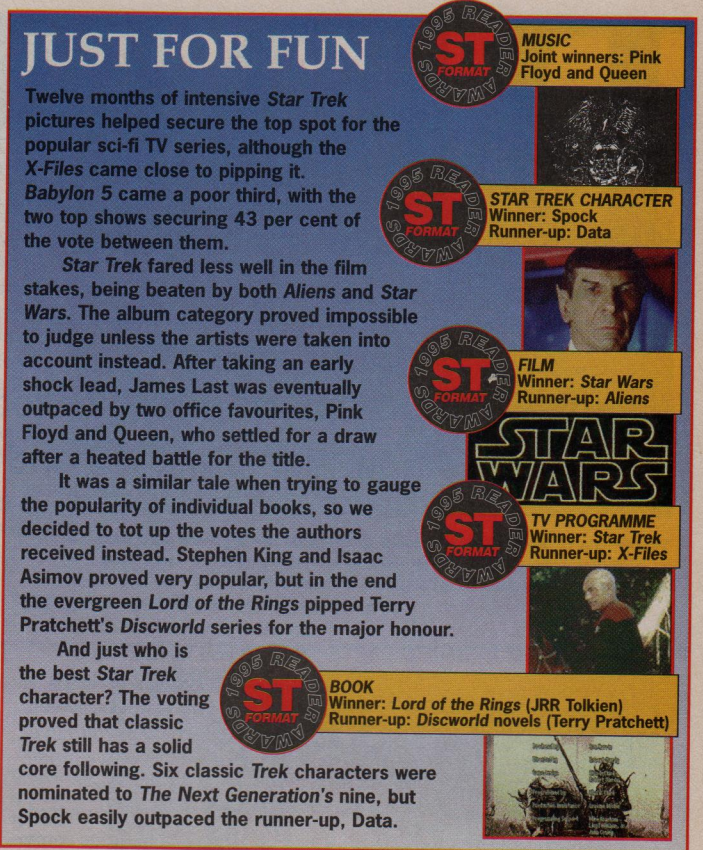
JUST FOR FUN

Twelve months of intensive *Star Trek* pictures helped secure the top spot for the popular sci-fi TV series, although the *X-Files* came close to pipping it. *Babylon 5* came a poor third, with the two top shows securing 43 per cent of the vote between them.

Star Trek fared less well in the film stakes, being beaten by both *Aliens* and *Star Wars*. The album category proved impossible to judge unless the artists were taken into account instead. After taking an early shock lead, James Last was eventually outpaced by two office favourites, Pink Floyd and Queen, who settled for a draw after a heated battle for the title.

It was a similar tale when trying to gauge the popularity of individual books, so we decided to tot up the votes the authors received instead. Stephen King and Isaac Asimov proved very popular, but in the end the evergreen *Lord of the Rings* pipped Terry Pratchett's *Discworld* series for the major honour.

And just who is the best *Star Trek* character? The voting proved that classic *Trek* still has a solid core following. Six classic *Trek* characters were nominated to *The Next Generation's* nine, but Spock easily outpaced the runner-up, Data.



Services

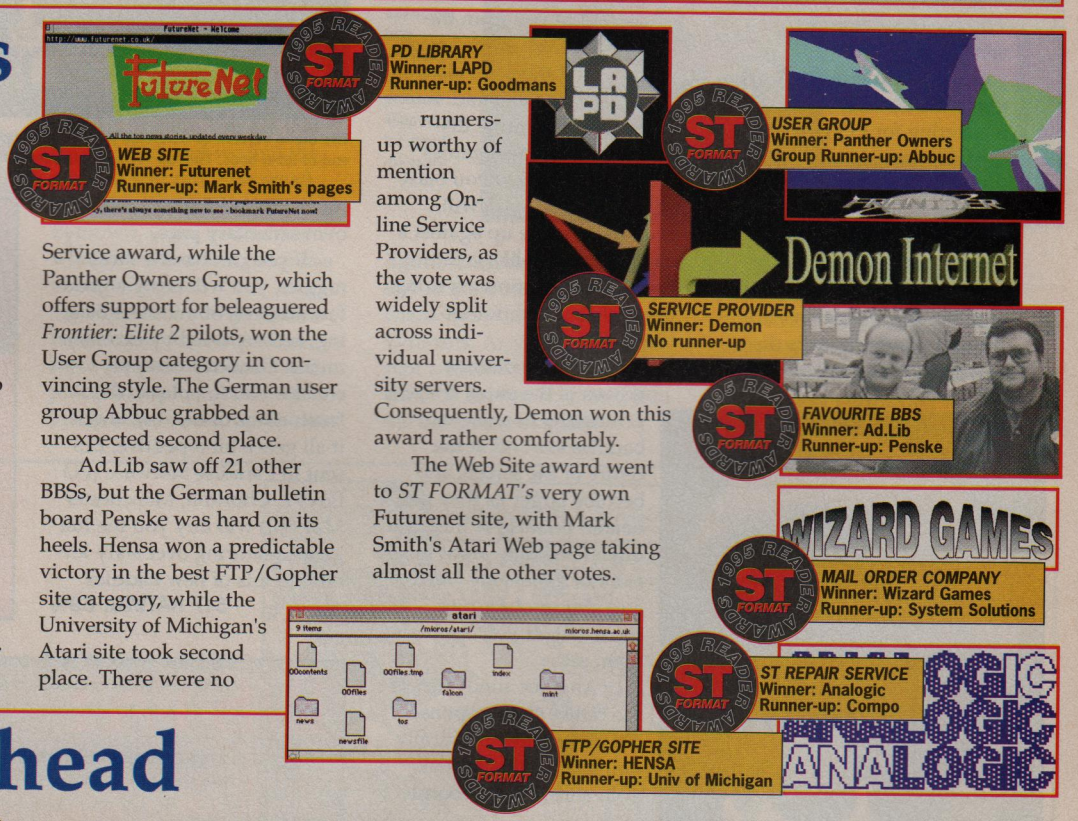
No less than 22 companies were nominated for the Mail Order Company award, proving that those who have remained true to Atari have had their trust repaid by their customers. The eventual winner was Wizard Games, with System Solutions taking the runner-up spot.

The 15 nominations for top PD Library didn't prevent LAPD from taking a lion's share of the vote, with 42 per cent to second place Goodmans' 15 per cent.

Analogic just squeezed out Compo for the Repair Service award, while the Panther Owners Group, which offers support for beleaguered *Frontier: Elite 2* pilots, won the User Group category in convincing style. The German user group Abbuc grabbed an unexpected second place.

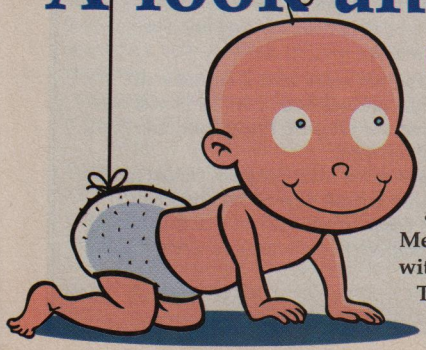
Ad.Lib saw off 21 other BBSs, but the German bulletin board Penske was hard on its heels. Hensa won a predictable victory in the best FTP/Gopher site category, while the University of Michigan's Atari site took second place. There were no runners-up worthy of mention among On-line Service Providers, as the vote was widely split across individual university servers. Consequently, Demon won this award rather comfortably.

The Web Site award went to *ST FORMAT's* very own Futurenet site, with Mark Smith's Atari Web page taking almost all the other votes.



HAPPY NEW YEAR 1996

A look ahead



There's plenty to look forward in 1996. The keenly awaited *Papyrus 4*, *Arabesque 2*, *Neon 3D* and *Positive Image* should finally hit the shelves, and Top Byte has several new games planned, including *Space Ace STario* and *Aronath*. Meanwhile, 16/32 Systems and Merlin will continue to support Falcon owners with both home-grown and imported software. There'll be a number of new upgrades for Falcon users, including the new 68040-based accelerator from Compo, and you can also be sure that the PD and shareware scene will continue to flourish, bringing you regular upgrades of your favourite applications as well as completely new packages. There's also plenty of excellent, untapped European software begging to be translated into English.

1996 is going to be a very interesting year, and you can rest assured that *ST FORMAT* will be here covering it all. Until then, though, we're off to plunder the leftover mince pies, dance a Highland fling, make (and break) our New Year's resolutions and enjoy a brief holiday. *stf*

PD & Shareware

Andy Curtis straps on a pair of rocket-powered sausages and blasts off to check out the latest PD and shareware.

Genocide

LAPD, Disk G433
All 1MByte STEs and Falcons, colour monitor and joystick required

GAME OF THE MONTH ST FORMAT

Fasten your seatbelts for wave after wave of explosive action in this multi-level pangalactic shoot-'em-up. This demo version provides you with a generous ten levels of action, and registering for £15 gets you over 50 more.

After a couple of professional-looking intro screens, up comes the traditional scrolling starfield and an options screen. There are one and two-player options, but the two-player mode is disabled in the demo version.

You won't need a degree in astrophysics to work out that all you have to do is shoot everything that leaps out at you from the screen. Fortunately, you never run out of weapons; unfortunately, there's a time limit. The baddies come at you from the centre of the screen, and there are also asteroids to avoid: too many hits and you're dispatched to the great games arcade in the sky. If you blast sufficiently well you will, eventually, come up against a nasty centipede-like creature. Fervent and continuous firing dispatches it without too much difficulty.

Genocide has definite echoes of the game *Tempest*, principally because the baddies start off at the centre of the screen, and become larger as they get nearer. Because of this, you often need to be right in front of the enemy craft, and almost obscuring them, before you can blow them away.

Another annoyance is the rather slow response. No matter how frantically you waggle the joystick, your ship will stubbornly move around the screen at its own sedentary pace.

If you can handle these niggles, you will enjoy a good few sessions of mindless blasting, accompanied by excellent music. Genocide certainly enables you to unleash the frustrations of the day, and if it all gets a bit repetitive, £15 sent to Paradise Software (PO Box 72, Chorlton, Manchester M21 8JL) will buy you the full game, featuring over sixty levels and lots of new baddies.

STF RATING: 89%

The demo version of *Genocide* provides ten relentless waves of baddies to kill off, plus an end-of-level boss. The full version has over 60 levels of blasting action.

Genocide features a rather bizarre, but well-written, intro sequence featuring a desert island and the cow who jumped over the moon.

STOS ALERT!

Many excellent games and utilities are written in *STOS Basic*. However, Falcons and some STs won't run *STOS* programs unless they have been patched with *STOSFix3*. We featured *STOSFix 3* on Cover Disk 67, which is now sold out. If you have difficulties running a *STOS* program, you can get *STOSFix3* and several other *STOS* patches from LAPD – call ☎ 01773 605010 and ask for disk U22.

B/STAT

Power, Disk PWR 119
All Ataris, 1MByte required

B/STAT is a statistical analysis program which uses a selection of established tables to assimilate and process data. Let's be honest here, we haven't actually got a clue what this program really does, and there are no documents to explain the functions.

A small help facility is included in the main program screen but it completely fails to give an adequate overall view of the program's funtionality. The interface is very rudimentary, with no real graphics. If you're something of a statistics propeller-head it may be worth a look, but otherwise leave well alone.

STF RATING: 35%

Plasma Ball

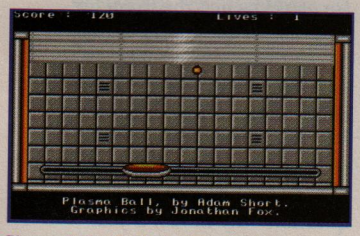
Floppyshop, Disk GAM 5261
All Ataris (TOS 2.06 and Falcon with *STOSFix*), colour monitor and joystick required

A successful game captures your imagination with strong gameplay, entertaining graphics and a subtle plot. Unfortunately, *Plasma Ball* is not a successful game. If you imagine *Breakout* without the blocks, you have a pretty good idea of what goes on.

Basically, you have to move a 'bat' with your joystick to keep a ball in play. The top of the screen is progressively lowered, giving you less and less space to work in. Sadly, the bat often doesn't move fast enough to meet the ball, so you can lose lives lives before the game has even begun. If you survive long enough, you get into the high scores board.

There isn't really any reason to recommend this game.

***STF* RATING: 49%**



Plasma Ball – it's kind of like *Breakout*, without the gameplay. Boredom lovers everywhere, take note.

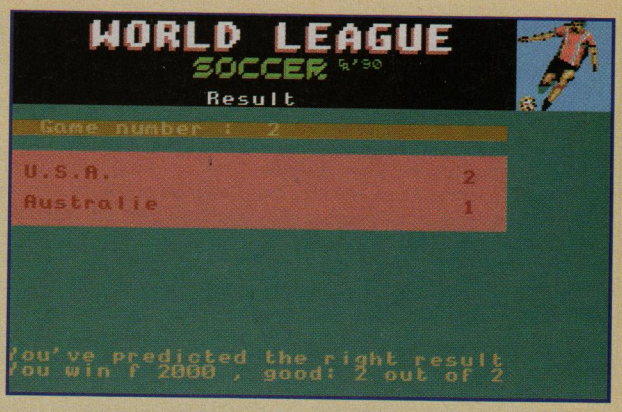
World League Soccer

Floppyshop, Disk GAM 5261
All STs (TOS 2.06 and Falcon with *STOSFix*), colour monitor required

If you find managing a football team exciting, this game could be just the ticket. It enables you to pick a name for your team, buy and sell players, and set up your own league competition. You then have to predict the results of all the games – if your selections come up, you receive a cash bonus.

There is no actual gameplay for the matches, just a brief pause while the computer decides which team is victorious. However, there are loads of options to experiment with, and it's a enjoyable distraction from Third Division football.

***STF* RATING: 78%**



It's more team management than kicking a ball about, but *World League Soccer* is a great game for enthusiasts. The inclusion of a gambling option seems to mirror real life – put a huge amount of money on your team getting thrashed in a match and then put out the under-11 side.

Craghaven

LAPD, Disk L112 (£2.50)
All Ataris, colour monitor required

Craghaven is a fetching tale of a simple farmer's boy who leaves his island home to seek fame and fortune on the continent of Angara. You are that country lad, and we join the story as you sail your small boat into the harbour at Eyntown, eager to discover what the unfamiliar place has in store for you.

Wherever you go in this well-written text adventure there are people to meet and places to explore. You might bump into a dark, mysterious figure, Chuckles the Jester, or any of the other colourful characters who live in Eyntown. As you progress the plot will slowly reveal itself, and it is easy to be drawn into the intriguing storyline.

Craghaven's screens are complemented by a series of tiny and uninspiring colour pictures, but if you're after high jinks then try *Craghaven* for hours of perplexing fun.

***STF* RATING: 84%**

***Craghaven* is a well-written and attractive text adventure, with a few pictures slipped in for good measure.**

Emperor

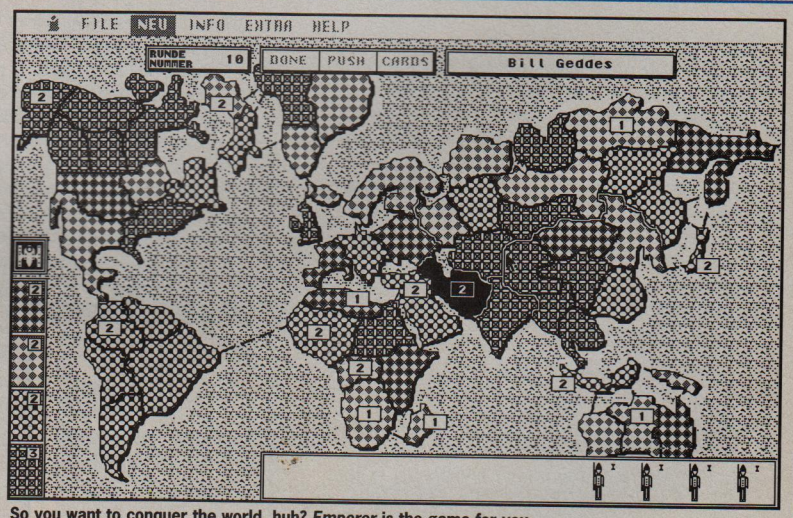
LAPD, Disk G424
All Ataris, high resolution

If you are familiar with the board game *Risk*, *Emperor* will hold few mysteries for you. It runs in high resolution mode, so you will need the supplied mono emulator if you only have a TV or colour monitor to hand.

Almost everything is in German, so deciphering the menu items is a game in itself. However, it isn't too hard to work out how to play, and you can soon busy yourself with the all-important task of killing off your opponents by conquering their countries. You can play against real or computer-generated opponents, and the game ends when you have completed your mission or defeated everyone else.

***Emperor* will definitely please anyone who fancies taking control of the entire world *(Oi Nick! Give me that disk back immediately! – Karen)*. Once you get the hang of the German controls, it's a game with long-term appeal, because you never quite know how it's going to turn out from one game to the next. There is a high level of skill involved in knowing which country to attack at any given time. This game is certainly one for the strategists among you, and a delight for those who only have mono monitors, but crave a good game every now and then.**

***STF* RATING: 84%**



So you want to conquer the world, huh? *Emperor* is the game for you.

Take500

Floppyshop, Disk MID 5272M
All Ataris, monochrome monitor required

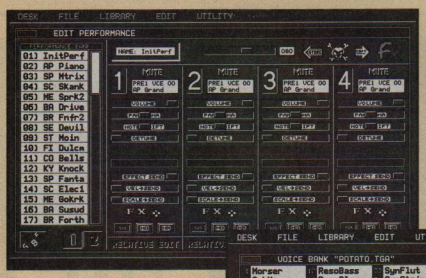
Take500 is a fully-fledged TG500 patch editor and librarian. It was written by Y-Not software, which produces many commercial synth editor packages. This one is in the public domain, though, because Yamaha wanted it to be freely available.

Take500 serves as an effective demonstration of Y-Not's elegant patch manipulation. It only runs in high resolution and, unfortunately, only from your internal floppy drive (the documentation mentions a hard drive installation program, but this utility is not supplied). You will also need a TG500 module and two MIDI cables – it is important that the editor can receive data from your module as well as send to it.

The package includes a formidable bank of sounds for you to enjoy, and you may edit them as you wish. An extensive manual on the disk tells you all that you need to know about the program.

If you have ever tangled with the TG500's on-board editing facilities, *Take500* is a like a breath of fresh air. All the controls and edit pages are laid out clearly and legibly, so there's no reason for TG500 owners to screw their eyes up in front of a tiny LCD screen again.

***STF* RATING: 91%**



(Left) *Take500* is a professional voice librarian and editing package. This particular screen enables you to edit the performance sounds of your TG500.

Sets of voices can be loaded from or saved to disk on your ST, enabling you to change every synth voice in an instant.

Muzak Player 2

Floppyshop, Disk MUS 5256
All Ataris (TOS 2.06 and Falcon with *STOSFix*), colour monitor required.

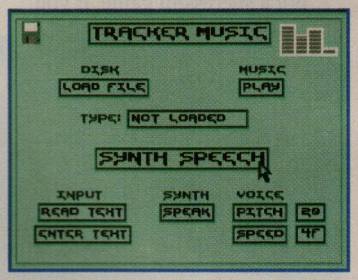
This competent music player makes good use of *STOS* extensions and can cope with many varied music formats (except MIDI). *Quartet* files, MOD files and countless sound chip music formats are catered for. The only tracker format that is not covered is the *Digit Tracker* standard – maybe this will be included in future versions?

The interface is in a rather dingy shade of dark green, but the program works very well. We tried MOD files created by several different programs and it didn't fail with any of them. The sound quality is good, although there are no controls for changing treble or bass response, a disappointment for STE and Falcon owners with their DMA chips.

There is a speech synthesis feature built in to the software, but it is rather bug-ridden and the author does not advise you to use it yet.

If you need one program to deal with almost every music format on your ST, *Muzak Player* is for you.

***STF* RATING: 81%**



Muzak Player isn't much to look at, but the music replay routines are great and cover almost every music type.

Rip It Up

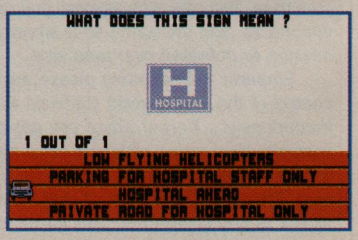
Power, Disk PWR 1052
All Ataris, medium resolution only

Many people have nightmares about trying to pass their driving test. If you want to load the dice in your favour, *Rip It Up* could be just the thing for you. It teaches you the signs and symbols of the highway code using a simple question and answer format.

You can start off using a multiple choice format, then move on to the less helpful question-only mode. If you can regularly score 90 per cent or above, you can be pretty sure that you won't have to worry about this section of the test. The illustrations are clear and comprehensive, and the whole program is bright, cheerful and easy to use.

Incidentally, if you think you know all the road signs, try running this program and answering a few of the questions. It's surprising how little we really know. Full marks to the author for a useful and practical program.

***STF* RATING: 74%**



So you think you know the highway code road symbols, do you? Think again!

Disk and Desktop Utilities

Floppyshop, Disk UTL 5291

Applier

STs with TOS versions prior to 2.06

This handy little utility enhances the TOS Install Application feature. It enables you to link file suffixes with programs, so that clicking on the document will load both the relevant application and the document ready for immediate use.

With *Applier* active it is possible, for example, to set the extension .TXT to load your favourite text editor. Instead of loading your text editor and then opening a file, all you need to do is double-click on a file with the .TXT suffix. This is an excellent enhancement, especially for older versions of TOS.

***STF* RATING: 79%**

iPRN

Any ST or Falcon

iPRN increases print speed by up to three times, as long as your printer can go that fast. It also monitors the state of the printer constantly, so that your ST will know immediately if the printer goes offline. This demo version has some limitations, but is well worth having if you use your printer regularly. It's just the job for those oh-so-slow *Calamus* printouts that can freeze up your machine.

***STF* RATING: 74%**

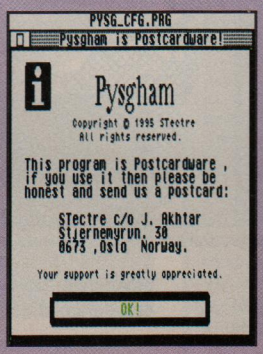
Pysgham

All Ataris, hard drive required

Pysgham creates virtual drives from folders, enabling you to access deeply nested folders and their files quickly and easily. If you keep all your pictures three folders deep on drive D, for example, *Pysgham* enables you to call this folder drive Q and access it as such. The benefits are a less cluttered desktop and a faster route to your often used files. Up to eight virtual drives can be installed at once, and you can load and save different configurations.

The program is postcardware, so please do take the time and trouble to send the authors a postcard if you find the program useful. It's not a lot to ask, and it will help in the future development of invaluable utilties like *Psygham*.

***STF* RATING: 89%**



A silly name, but a useful program. *Pysgham* creates virtual drives aliased to folders on your hard drive.

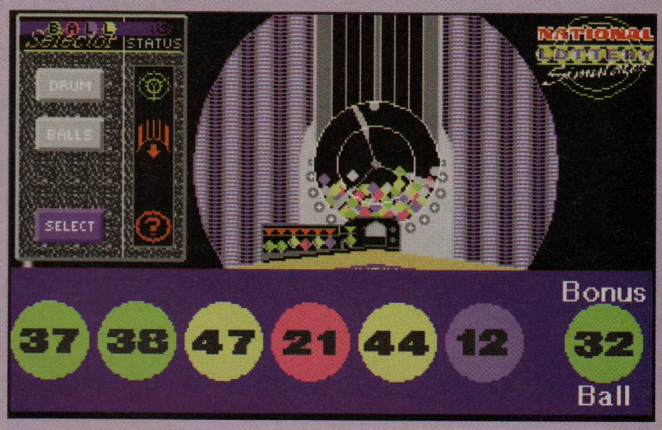
National Lottery Simulator

Floppyshop, Disks S-UTIL5224 and S-UTIL5225 (£3.50), Falcon version F5226 (£2)
All 1MByte Ataris (TOS 2.06 and Falcon with *STOSFix*), colour monitor required

The National Lottery has prompted an assortment of number selection programs on the ST, but none could be more complete and entertaining than the *National Lottery Simulator*. The samples are so big and the graphics so well done that the whole thing needs two disks. Hard drive owners with 2MByte of RAM can even get an enhanced version.

The program is packed with plenty of options and it provides no less than three different methods for choosing the numbers. The full method really captures the atmosphere of the BBC presentation, complete with audience participation and convincing music. Dramatic chords and audience cheers add considerably to the suspense as the balls are selected. The experience is so convincing you may even be tempted to check your tickets, cursing if you win because it's not real.

The quick method simply dumps the random numbers to your screen, a rather pointless exercise in itself, and there is a 'fix' method which enables you to rig the outcome. If you fancy making an event out of choosing your numbers, then the *National Lottery Simulator* is great fun.



I've won! I've won! No, sorry folks, it's just a load of computerised balls.

You may, however, think that this program is complete overkill for such a simple task. We couldn't possibly comment.

***STF* RATING: 85%**

Magic Speller

Floppyshop, Disk EDU 5237
All Ataris, low resolution only

Magic Speller has the potential to be a great spelling aid for young children. The screens are colourful and there are lots of spelling tests supplied. There is also the facility to create spelling tests better suited to your children's needs.

Unfortunately, there's not enough error checking on keyboard input, so if you type too many characters for a word it will take the extra characters as the start of your next spelling attempt. This can be confusing and irritating, especially for children, who are apt to make this sort of mistake.

The real problem with the program is its reliance on a computerised voice to request spellings – often you cannot tell which word has been spoken. A clue does appear for each word, but you really shouldn't have to guess the word as well as spell it. Could do better, report ends.

***STF* RATING: 65%**

Magic Speller, the kids spelling aid that just falls short of the mark. The speech is difficult to decipher and the whole experience less than thrilling.

Falcon 030 STOS Extensions Suite

Floppyshop, Disk F 5307
Falcon only

If you use *STOS* on the Falcon, this disk is a system requirement. It contains all the extensions you need to get *STOS* working well on your machine. The files include a system control extension, graphics, sound and MOD player for the *STOS Basic* interpreter. Full instructions for installing the extensions are included in the help file supplied on the disk.

As well as the extensions, there is a wealth of documentation files, *STOS* listings and pictures in .LBM format. *STOSFix3* is also included, enabling you to patch *STOS* programs so they load and work with your enhanced hardware.

Please note that the extensions on the disk are all unregistered shareware versions – you will need to register if you use them regularly. The disk is a one-disk solution for *STOS* enthusiasts who own a Falcon, and very good it is too, enabling *STOS* to harness the power of your machine.

***STF* RATING: 88%**

PD & SHAREWARE ROUND-UP

Just in case you missed it... here's a round-up of the best software from the past four months.

Title	PD Library	Type	Issue	Rating
Tautology 2	AdLib PD	Falcon game	76	93%
Skyduel	Floppyshop	Game	75	92%
Switch	Merlin PD	Falcon game	76	92%
Everest 3.5	Goodmans PDL	Text editor	77	91%
Egale 2.7	HENSA	Utility	76	90%
Freedom 1.14	HENSA	File selector	71/74	90%
Wildlife Slideshows	STellar PD	PCS pictures	77	90%
Da Capo 1.22	HENSA	Address manager	77	89%
Backward 3	Merlin PD	ST emulator for Falcon	75	88%
The Lost Blubb	Floppyshop	Falcon demo	75	88%
HERO	Goodmans PDL	Game	77	88%
Thing 0.54E	Floppyshop	Desktop	74	86%
Xlator 2.0	Merlin PD	Translator	76	86%
KIVI 1.41	HENSA	Off-line reader	74	85%
Novadisk 8	James Bird	Diskmag	76	85%
Anoraks of Doom	Goodmans PDL	Game	76	83%
ESSCode 6.4	HENSA	File converter	74	83%
Third Dimension issue 15	Floppyshop	Diskmag	76	83%
Cartoon Capers	Power PD	Game	74	82%
Pipetris	Cover Disk 77	Game	77	81%
Counter Atak	Floppyshop	Game	75	80%
Pixikrome	Floppyshop	Image processing	76	80%
STOSSER Multimedia	Goodmans PDL		77	80%

ST Answers

Frank Charlton steps confidently into Clive Parker's shoes this month... then steps in everything else Clive left behind... oh dear.

MARCEL IT UP

Q In issue 76 you recommended *AtariWorks* to Martin Jones. He was looking for a word processor capable of producing RTF files, but the HiSoft product seems a bit pricey for this limited use.

Might I suggest the shareware word processor *Marcel* as a cheaper alternative. It offers the RTF import/export he requires, and it's not at all bad – I've used it for translating files for some time.

Gareth Jones, via e-mail

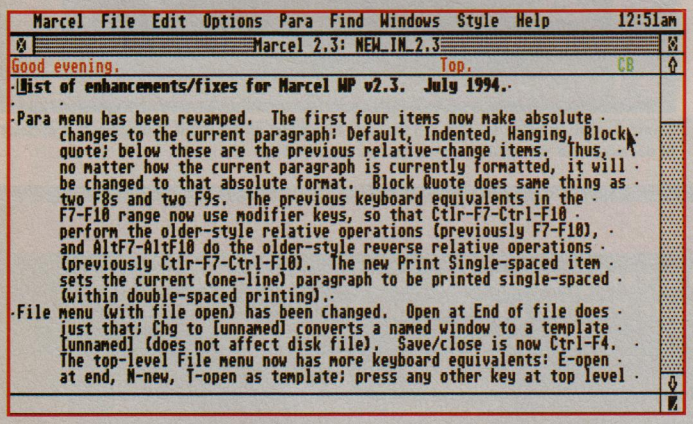
A *Thanks for that, Gareth.* Marcel *is an excellent little word processor that puts some of the older commercial offerings to shame. The RTF support isn't perfect, though – it loads RTF files saved from* AtariWorks, *but crashes when we try to load RTF documents from* Papyrus. *However, there's no harm in trying, and you only have to register if it works.*

DAT'S THE WAY

Q After reading issue 76's article on hard drive back-up, I'm wondering if there is a program which can back up ordinary data to DAT via the Falcon Digital Interface? I have a program which came with *Cubase Audio*, but it only works with AIF sample files. Backing up my whole hard drive to DAT would save me a great deal of extra expense.

Dave Stanton, Slough

A *Well. there's good and bad news, Dave. Soundpool produces a utility which uses the FDI to back your hard drive up to Digital Audio Tape, but as far as we know it's only available as part of* AudioTracker, *the eight-track direct-to-disk recording software. Call System Solutions (☎ 0181 6933355) and ask if you can buy a copy separately.*



The shareware word processor *Marcel* puts many commercial offerings to shame.

FLASHER!

Q I have a couple of questions concerning my 1MByte STE:

1 When my 720K disk drive is not accessing a disk, it flashes. Any idea why?

2 I have two disk drives. I can read and write to drive B with no problems, but can only read from drive A. I cannot save to it because it completely corrupts the disk, as if it has formatted it, but not completely. Any suggestions?

Symon Hambrey, Malvern

A *First, the disk access LED on all STs flashes slightly, even when there isn't a disk in the drive. This shouldn't really be obvious unless you're in a semi-dark room.*

If the light flashes at full brightness – that is, just as it does when accessing the disk – there may be a problem with the drive. As your external drive works normally, it's likely to be the drive itself, rather than the ST's disk controller chip.

Second, it sounds very much as if your internal drive's heads are out of alignment. Disk heads are precision mechanisms, and need to be very precisely aligned. The screws holding them in place can sometimes slacken after a lot of use, and the heads will drift just enough to cause the symptoms you describe.

This isn't something you can fix yourself, as you need precision tools to measure the alignment angle. Your best bet is to have the drive looked at by a repair specialist. However, replacing the whole drive mechanism may well be cheaper than having it repaired.

EXTRA SCREWS

Q I have just noticed, with horror, Clive Parker's solution to Mr Stokes' DIY Video Port question in issue 71.

Mr Stokes' problem is that, like me, he is the owner of an STE, which has three screws holding the power supply in place. The third screw can only be accessed by removing the three screws holding the motherboard down, and then removing the motherboard from the case bottom.

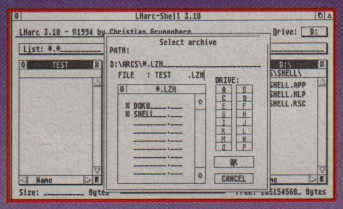
Patrick Jones, St Ives

LHARCIN' ABOUT

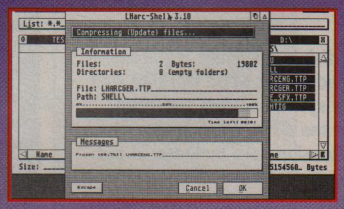
Q Could you explain how a simple mortal such as me can use the GEM shell version of *LHARC 3.10* (Wonder Disk 70)? I want to create a TOS file which has packed a batch of directories and files, just like the TOS files on your Cover Disk.

Michel Oks, St Clement, France

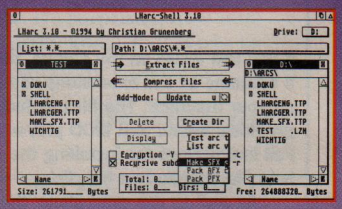
A ***To create a neat little self-extracting archive, just follow this step-by-step guide:***



1 The *LHARC* shell has two file selectors: use the left one for the contents of the archive, and the right one for the uncompressed files on your disk. Click on the close box on the left selector to open a normal GEM file selector, and choose a name for your new archive. You don't need to add the LZH extension either, as the shell does it for you automatically.



2 With your empty archive open in the left window, navigate through the right window until you've found the files you want to compress. Use the mouse to highlight either individual files or entire directories (thereby packing both the folder and its contents). With your chosen files highlighted, just click on the Compress Files button in the centre of the screen.



3 Once *LHARC* has finished packing your archive, you should see the packed files in the left window. To create a self-extracting TOS file, move to the Command button. A drop-down menu will appear – select Make SFX. Point the GEM file selector at the LZH file you just created, and *LHARC* creates a self-extracting archive, leaving the LZH version intact.

You can buy the Zip drive both with and without a host adaptor.

Yes, you're right. It appears that some revisions of the STE motherboard have the power supply attached with three screws, rather than just the two mentioned in Clive's answer.

A quick case-opening session in the ST FORMAT *office reveals that all our STs are the same, with only two screws to anchor the PSU. Nevertheless, we goofed, and one of the office Klingons has been dispatched to thrash Clive soundly with a wet towel. He won't make the same mistake again. In fact, he's unlikely to be any mistakes for a while…*

ZIP IT UP

Q I understand the Zip drive package from HiSoft includes everything you need to use it on any SCSI-aware Atari: the Zip 100 drive, a 100MByte cartridge, all the necessary leads, and a complete set of software. Does it come with a SCSI–ACSI adaptor?
T Anderson, Stockport

A *Yes, if you want one. HiSoft sells the Zip drive kit both with and without a host adaptor. If you have a Falcon, or already own a host adaptor, you won't need (another) one; otherwise HiSoft provides the excellent ICD Link 2.*

GHOSTS

Q In issue 71's PD Section you mentioned a utility called *GhostLink*, available from Riverdene PDL. I have three questions about this:
1 Is it possible to use the PC's floppy drive as a drive B for the ST? 2 Do all 520STE machines have a null modem port? 3 Which port do you use on the rear of the PC?
James Selway, Harrogate

A 1 *No. As far as we know,* GhostLink *will only allow you to use the PC's hard drives.* 2 *There's no such thing as a null modem port really, it's just the standard modem port on the back of the ST. A null modem cable is designed to connect two computers directly, rather than via a modem, and it's slightly different from an ordinary modem cable. Any standard RS-232 null modem cable from a computer shop will do.* 3 *You use the serial port, often marked as COM1 or COM2 on a PC. It may look different from your ST's modem port, as modern PCs use 9-pin connectors rather than the older 25-pin ones. It still works, but you'll need to ask for a 25-pin to 9-pin null cable.*

FLOPPY FAILURES

Q I do a lot of work from home, using *Protext 4.3*. I run the program from a hard drive, but it spellchecks from drive A – slowly! I've spent over a year teaching the inadequate dictionary loads of work-related jargon, and there were around 3,500 words in my USER.DCT.

Now all of a sudden, *Protext* has decided my dictionary is "bad". I've checked the disk and there doesn't seem anything wrong with it. I've also compared the files to the ones for my new dictionary, and they only differ in size.
Barbara Pancha, London

A *First of all, Barbara, you should reconfigure* Protext *so you can access the dictionaries from your hard drive. It comes with a separate configuration program, and you can set this up to point the spellchecker to a hard drive partition, then save the config file.*

As far as your original floppy-based dictionary goes, it's more than likely the disk has developed a fault with age and the heavy use it gets when you spellcheck a document. One thing to try: load the USER.DCT into Protext *as if it was a document. If the file is intact,* Protext *should load it. Spellcheck as normal, and add all the words to your new user dictionary.*

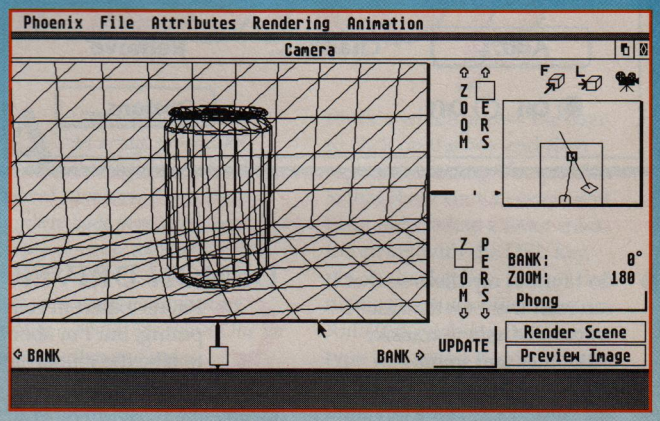
You really should back up important disks like this one, especially when a year's work can be lost like this.

OUTSIDE, YOU!

Q I use *Xenomorf 2* on my 4MByte Falcon030, which has a 68882 co-processor. Whenever I try to render complex images, the program complains that there is not enough memory. Is there any way I can eliminate this problem without spending £600 on a memory upgrade?
Douglas D Grannell, Newcastle-under-Lyme

A *There certainly is, Douglas. You could take a look at the* Outside *virtual memory manager for the Falcon. Virtual memory managers watch for little-used chunks of RAM, and 'swap out' their contents to your hard drive, freeing up real memory. When the program requests information that has been swapped out,* Outside *will re-load it from disk.*

You need to be able to set aside some hard drive space, obviously, but Outside *can even take you beyond the Falcon's 14MByte limit. It works very well, and yes, it certainly works with* Xenomorf 2. Outside *costs £70 and is available from 16/32 Systems (☎ 01634 710788).*

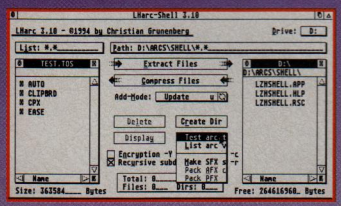


Xenomorf 2 can render bigger images using *Outside*'s virtual memory. As long as you have the necessary hard disk space, it's much cheaper than a RAM upgrade.

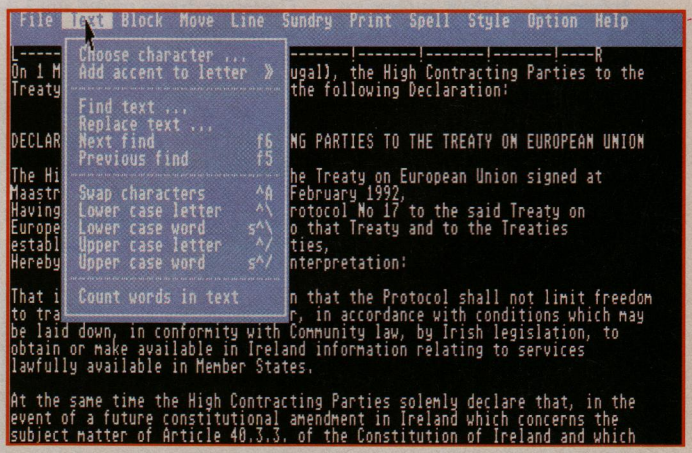
MAC ATTACK

Q Is there any way to connect my 2.5MByte STFM to an Apple Mac LC475? I would like to use the Mac's hard drive and high-density floppy as slave drives on my ST.

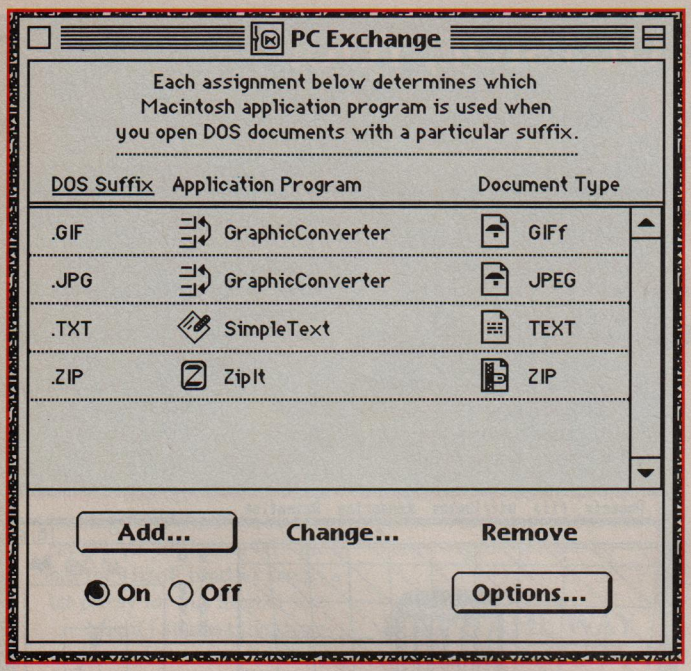
If this is not possible, how ➧



4 If you want to test your new self-extracting file, either load it back into *LHARC* and click on Test arc from the same menu as Make SFX, or simply double-click from the Desktop. The files will be extracted if the archive is okay. This way you can pack even more files on to a single disk – this month the Cover Disk contains 1.3MByte of data, for example!



We love using *Protext* grabs in ST Answers, so keep sending those *Protext* problems in!



You can't create or read Mac disks on an ST, but if you create MS-DOS disks with *Fastcopy 3*, you should be able to transfer files from your ST to a Mac.

do I format my disks so that I can read them on the Mac? I want to be able to transfer MIDI files and so on.
Malcolm Rigg, Isle of Lewis

A *Unfortunately, Malcolm, there's no way to do this. While the PC and ST use very similar disk filing systems, the Mac uses a system known as HFS, or Hierarchical Filing System. Mac floppy drives also use a standard known as GCR – Group Code Recording – which varies the spin speed of the disk as it reads and writes.*

However, we can help with your second question. Modern Macs with System 7 – including your LC475 – should have a system extension called PC Exchange, *which allows the Mac to read and write standard PC floppies. The simple answer is to create MS-DOS-compatible disks which can be used in both machines. One suitable formatter is* Fastcopy 3, *which you can pick up from any PD Library, or from Cover Disk 62.*

DEMON DRIVER

Q I'm no expert in computing, but I'm about to take the plunge and buy a hard drive for my STE – ideally about 540MByte and 'plug in and go'. I would appreciate your advice.

First, I was confused by issue 73's Six of the Best article. The MaxiS drive was rated at 89%, but in issue 70 it scored 97%. Do original ratings change relative to subsequent reviews of other drives?

Also, I'm confused by some of the features. Analogic run ads mentioning the features of their Protar Series II drives. Are all drives "Auto-booting, auto-parking", and do they all have "Selectable boot partition, Device Number switch and management software"? What about space to add another drive in the same case? I couldn't tell which of the MaxiS, Squirrel and Gasteiner drives match up to the Protar.
Hugh J Lee, Glasgow

A *Yes, ratings will change as time passes. A piece of hardware which won the coveted* ST FORMAT *Gold a year ago may no longer be state of the art today, and ratings change to reflect that.*

All modern hard drives have the features you mention, with one exception. Of all of the drives tested in issue 73, only two have a case that is big enough to accommodate another drive mechanism – the Protar and the MaxiS from System Solutions. The main difference between the two is case design – the Protar uses the old 'slab' design, so you can use it as a monitor stand, whereas the MaxiS uses the more modern 'toaster' design and stands upright.

As Andy said in the article, there's little to choose between the drives we covered. Our personal favourites, for sheer speed and ease of use, are the MaxiS and HiSoft's Squirrel drive, both of which use fast Quantum mechanisms. Take your pick, and enjoy your ST in a whole new way. Don't forget to back up your data regularly – see issue 76 for advice.

FAZED OUT

Q I use the screensaver *Faze* from Cover Disk 71, together with *Supercard 3.13*. When *Faze* sets in while a card is still open, I get double images which persist as red/green double images, even when I return to the main menu screen of *Supercard*. This obviously is very disturbing.
P Thiebault, Paris, France

A *The red/green double images are usually what you see when a GEM program has attempted to switch between low and medium resolution, and hasn't re-set the screen properly when it quits. Presumably,* Faze *is switching to low resolution for the screensaver, then not quite managing to switch back to medium resolution for* Supercard *to carry on. The best suggestion we can give you is to try another screensaver.*

DODGY DISCS?

Q I am having problems with my ST: each disk I insert either seems to be wiped completely, or skips the Auto folder and goes to GEM, where the names become unreadable and the programs become unusable. What's wrong?
S Norman, Norwich

A *If your ST is doing this with every disk you insert, you have a fairly major problem with your ST's internal floppy drive. Your best bet is to have it repaired or replaced, and replacing may well be the cheapest option. Get your ST looked at by a reputable repair outfit – try Compo ☎ 01487 773582 or The Upgrade Shop ☎ 01625 503448 for starters.*

Problems with your ST? Falcon giving you grief? Send your tale of woe to Uncle Frank at: ST Answers, ST FORMAT, Future Publishing, 30 Monmouth St, Bath BA1 2BW, or e-mail them to: de18@dial.pipex.com.

If *Faze* is giving you problems, try an alternative screensaver, such as *Before Dawn* (above).

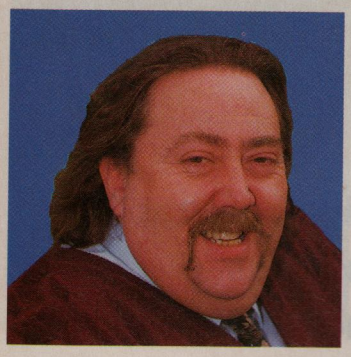
BLITTER, TWISTED

Q I would like to know what the difference between an ST and a TT is, please. I would also like to know what a Blitter chip is, and whether a TOS 1.62 1989 STE should have one.
Andrew Smellie, Wishaw

A ***The TT was launched after the ST, but before the Falcon030. Built around a 68030 processor running at 32MHz, it came in a MegaSTE-style separate case. The TT was designed as a professional workstation, and Atari even licensed the multi-user operating system UNIX for it. The ST, on the other hand, has a 68000 processor and is essentially a home machine.***

The Blitter is a custom chip designed to process graphic data, taking some of the strain from the ST's main processor. Every machine from the STE onwards has one, so yours certainly does.

The TT (left) followed the ST, but was designed as a professional workstation.



Mac Marsden unplugs himself from the Internet and fires his huge brain (so he says) into *GFA Basic* mode, ready to answer your questions.

GFA Workshop

TESTING TIMES

Q I've been doing lightweight *GFA* programming for a couple of years now. My present project involves producing a MCQ-type examination 'paper'. The production of the file containing the questions and answers isn't a problem, but I've been unable to sort out one seemingly simple routine.

What I've done is produce (for example) 500 questions with answers. What I then want to do is retrieve these questions in a random fashion. Producing a random number is not difficult, but my problem is this – I want to retrieve a number of questions in a random fashion, but obviously without repetition. Therefore, I want a routine that will write the numbers from 1 to 500 in a random fashion. I'm sure arrays are needed, but I just can't find the solution.

It would also be good if, on subsequent use of the program, the order of numbers is different. For example, a user might answer ten questions, then, on returning to the program the next day, answer another 10, but a different set. Some questions may be repeated, but ideally each set of questions will be different.

Philip Turner, Bradford

A *One solution is to have an array, say x(500), holding the randomly selected numbers. When these numbers have been used, you simply generate another set and overwrite the file. I am sure the user would not mind waiting once in a while. See Panel One for the algorithm and code.*

The program will take a little time as more and more numbers are used up, but the user will be able to sit back and answer or attempt to answer the questions without interruption.

The other file you require for this to work is a simple log of how far down the list of questions the user is. If, say, the log is at 100 and the user attempts another 40 questions before terminating the program, you overwrite the file with 140. This gives you the starting point of the next session.

Be careful when selecting the seed for your random number generator Randomize(x). One infallible method is to use the date: add the month and date and year and use the result as the Randomize variable.

NEL ONE PANEL ONE PANEL ONE

Algorithm for 500 random numbers file

```
Outer loop counting to 500 (f)
    Do loop until number selected and not used before
        Select random number (1-500)
        loop from 1 to f to check number not used before
            if number not used before
                array(f) = number
            endif
        end loop
    end loop
Increase loop number
end loop
Save Array
```

Random numbers program

```
DIM ARRAY(500)
FOR F = 1 TO 500
    LOOPEXIT = 0
    COMPARE = 0
    DO
        X = RAND(500)+1
        FOR G = 1 TO F
            IF X = ARRAY(G)
                COMPARE = 1
            ENDIF
        NEX T G
        IF COMPARE = 0
            ARRAY(F) = X
            LOOPEXIT = 1
        ENDIF
    LOOP WHILE LOOPEXIT <> 1
NEXT F
```

PIPPED

Q Thanks for the help you gave to me in *ST FORMAT*. My database now speeds along with the best of them... except when I'm entering text.

The problem is entering text into text boxes created in *AutoZest*. I've tried to make a routine which allows the user to click on the box and then type in the string. The problem is that there isn't a cursor, and I can only delete a letter from the string with the DEL key, not the backspace. I have tried making a routine like those in *AutoZest*, enabling the user to type in a string which follows the mouse pointer around until you click, whereupon the text is placed, but I am suffering from screen corruption.

Pip, no address given

A *Pip, thanks for the compliment, and let's see if I can help you again.*

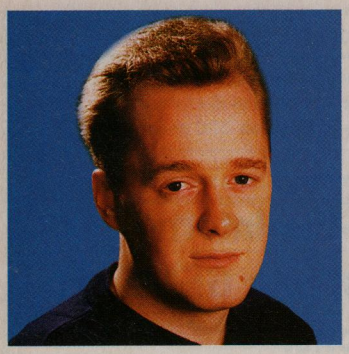
I think the solution is to use FORM INPUT, and I suggest you design your database screen around your FORM INPUT lines. Although this will be time-consuming initially, the finished product will look professional and do what you require.

All you have to do is to work out the x and y co-ordinates around the area and include the following lines to check for a mouse click:

```
IF (mouseX > BOXLEFT AND
mouseX < BOXRIGHT AND
mouseyY > BOXTOP AND mouseyY
< BOTTOM)
    FORM INPUT ...
ENDIF
```

When users click the mouse pointer within the specified rectangle on the screen, the particular FORM INPUT command for that area is called, giving them full editing facilities.

If you would like a specific topic covered or are stuck with a particular problem, write to Mac at: GFA Workshop, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW or e-mail him at: de36@dial.pipex.com. Please include details of your computer.



Triple buffering enables you to manipulate graphics quickly and smoothly. Andy Gisby explains – physically, logically and virtually – how it works.

Assembly Line

The high-speed manipulation of graphics is one of the most attractive aspects of assembly programming. However, you need to ensure everything runs smoothly. This is where triple buffering comes in.

Triple buffering involves the cyclic usage of three draw areas. If you are lucky enough to have a Blitter chip, it really comes into its own.

Three areas in memory are allocated in memory to act as three animation buffers. You don't necessarily need the areas in consecutive memory positions, but it is good programming practise to keep sets of buffers together.

Controlling the buffers is simple. A buffer can have any one of three roles (states):

- Physical – the buffer is displayed to the user;
- Logical – the buffer will be the next draw area; and
- Virtual – the buffer that is waiting to become the next logical buffer.

The roles can be cycled: the Logical becomes the Physical (displaying the frame just drawn); the Physical becomes the Virtual (ready to be cleared); and, finally, the Virtual becomes the Logical. Confused? Look at the code in Panel One.

A screen on your ST takes up 32K, so triple buffering requires 96K. If you use the buffers as screens, the next frame can be displayed using the Extend BIOS function 5 call (setscreen) – see Panel Two.

ONE

```
move.l   physical, -(sp)
move.l   logical,physical     ; Logical becomes new physical
move.l   virtual,logical      ; Virtual becomes new logical
move.l   (sp)+,virtual        ; Physical becomes new virtual
```

TWO

```
         move.w  #-1,-(sp)        ; 0 = low, 1 = Med, 2 =
                                    Hi res, -1 = No change
         move.l  physical,-(sp)   ; Display buffer
         move.l  logical,-(sp)    ; draw Buffer
         move.w  #5,-(sp)         ; XBIOS setscreen
         TRAP    #14
         add.l   #12,sp           ; Tidy stack
```

This function call will not physically change your ST's hardware video registers until the next vertical blank interrupt (VBL). Also, if you are allocating screen buffers on your ST (STE owners need not worry), you must ensure any screen video addresses have an address value that is exactly divisible by 256.

When the new Physical buffer is physically displayed (after VBL), you need to go about clearing the new Virtual buffer (ready for future frames). There are several ways to clear a block of memory quickly, but the best method is to use a Blitter chip.

The main reason for this is parallel functionality. You can trigger the Blitter to clear the new Virtual buffer, and proceed to draw the next frame in the Logical area at the same time (providing you're not using the Blitter to draw things). Neat, eh?

If you don't have a Blitter chip, the code in Panel Three describes one of the faster methods of clearing 32K. Can you think of a better one? This code has to finish before you can start to draw the next frame in the "logical" area.

Using the Blitter chip is relatively simple. You load up the registers (in supervisor mode), and trigger the Blitter chip into action. I'll cover the Blitter in another column, but in the meantime the code in Panel Four will clear a 32K Virtual buffer.

THREE

```
            movem.l   empty_regs, D0-D6/A0   ; 8 long registers set to 0
            move.w    #999,d7                ; 1000 (DBRA) loop iterations
            move.l    virtual,A1             ; Area to clear
.loop       movem.l   D0-D6/A0,(A1)          ; get 68000 to clear 32 bytes
            LEA       32(A1),A1              ; Increment area to clear
            DBRA      d7,.loop               ; back around the loop
            :
empty_regs  dc.l      0,0,0,0,0,0,0,0
```

FOUR PANEL FOUR

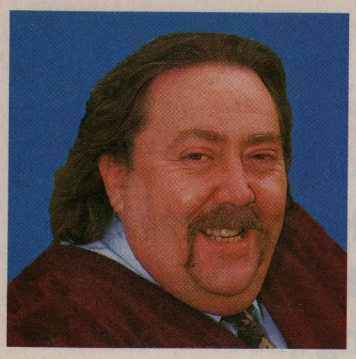
```
* BLITTER REGISTERS
* ----------------
HALFTONE    EQU     $FF8A00
SRCINCX     EQU     $FF8A20
SRCINCY     EQU     $FF8A22
SRCADDR     EQU     $FF8A24
ENDMASK1    EQU     $FF8A28
ENDMASK2    EQU     $FF8A2A
ENDMASK3    EQU     $FF8A2C
DESTINCX    EQU     $FF8A2E
DESTINCY    EQU     $FF8A30
DESTADDR    EQU     $FF8A32
COUNTX      EQU     $FF8A36
COUNTY      EQU     $FF8A38
HOP         EQU     $FF8A3A
OP          EQU     $FF8A3B
LINENUM     EQU     $FF8A3C
SMUDGE      EQU     5
HOG         EQU     6
BUSY        EQU     7
SKEW        EQU     $FF8A3D
NFSR        EQU     6
```

(continued in next column)

```
FXSR        EQU                 7

.waiting_for_blitter
                    BTST    #BUSY,LINENUM        ; BLiTTER in Use?
                    BNE     .waiting_for_blitter
* Set up Blitter Variables
                    move.w  #16000,COUNTX        ; source count x
                    move.w  #0,COUNTY            ; source count y
                    move.w  #0,SRCINCX           ; source inc x
                    move.w  #0,SRCINCY           ; source inc y
                    move.l  #empty_word,SRCADDR  ; source address
                    move.w  #$FFFF,ENDMASK1      ; End masks
                    move.w  #$FFFF,ENDMASK2
                    move.w  #$FFFF,ENDMASK3
                    move.w  #2,DESTINCX          ; Destination inc x
                    move.w  #0,DESTINCY          ; Destination inc y
                    move.l  virtual,DESTADDR     ; Destination address
                    move.b  #0,SKEW              ; No bit Skew
                    move.b  #$2,HOP              ; Half tone operation
                    move.b  #$3,OP               ; Logical Operation
                    BSET    #BUSY,LINENUM        ; Trigger chip!
                    RTS
empty_word          dc.w    0
```

If you have any questions about assembly programming, write to Andy at: Assembly Line, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath BA1 2BW.



Mac Marsden celebrates the festive season with the next part of his guide to programming drop-down menus with the HiSoft C Interpreter.

HiSoft C Centre

As far as GEM is concerned, any single user action (keypress, mouse click) of any drop-down menu item, or the manipulation of a window (changing size, manipulating a slider, moving the window and so on), is an event. It's GEM's way of telling you what you've done with the mouse or keyboard.

The algorithm in Panel One shows a typical GEM program. Translating this algorithm into C produces the listing shown in Panel Two.

If you examine the listing in detail, you'll see that the variables declared at the beginning of the program are used to store the type of event and the details of each particular event. These variables are modified by the user and tracked by the program by means of the event function. Variables x and y hold the position of the mouse cursor. The array 'window' contains extra information about any window event.

If we could execute our skeleton program, it would go something like this: all variables are initialised, the event function is called and waits for something to happen. Depending on what action the user has taken, the program calls that specific function, then returns to the event function.

EVENT FUNCTION

The event function uses six parameters:

```
event(&menu_title,
&menu_item, window,
&key_press, &clickx,
&clicky)
```

These parameters were explained last month. All parameters are modified by the call to the function (hence the &). They allow you to indicate the type of events you wish to monitor and the details of the event that occurred are returned. If we wished only to wait for &key_press, we would put zeros in the place of the other variables.

Next month we will examine the four events in detail.

PANEL ONE

create the menu
create the dialog boxes
open the Windows
While we haven't finished, do the following
  wait for an event
  Depending on the type of event
    If it is a mouse event
      Deal with the mouse event
    If it is a keyboard event
      Deal with the keyboard event
    If it is a menu event
      Deal with the menu event
    If it is a window event
      Deal with the window event
Close the window
Remove the menu

EVENTS

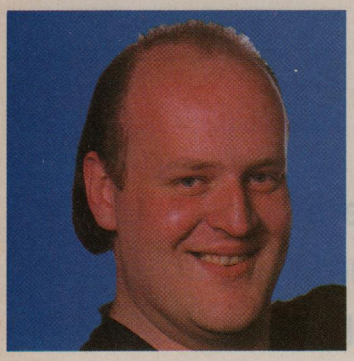
Val	Event type
1	Key press
2	Mouse button click
3	Menu selected
4	Window manipulation

The event function returns values indicating which option the user has selected. Other functions are available, but they use the GEM functions evnt_multi, evnt_timer or evnt_mouse directly, rather than a toolbox function.

PANEL TWO

```
/* Note program won't work as we haven't set up menu items, */
main()
{
     int menu_title, menu_item;
     int x, y; /* mouse co-ordinates */
     int event_type;
     int ch; /* holds character typed in at the keyboard */
     short window[6];
     int notfinished;
/* The following three statements initialise the environ-
ment, calling the functions which would open user defined
window(s), create the menu and dialog boxes */
     create_menu();
     create_dialog();
     openwindows();
/* The while loop waits for and deals with any events
required by the user until he/she decides he wants to exit
the program and go and play a game. */
     while (notfinished)
     {
/* The event_type variable holds the number (see panel 1)
returned with the user action. */
          event_type = event(&menu_title, &menu_item, window,
                                  &ch, &x, &y); (all one line)
          if (event_type == 2)
          {
               do mouse(x, y);
          }
          if (event_type == 3)
          {
               do_menu(menu_title, menu_item);
          }
          if (event_type == 1)
          {
               do_key(ch);
          }
          if (event_type == 4)
          {
               do_window(window)
          }
     }
/* get rid of drop-down menu bar */
     destroy_menu();
/* close any windows that remain open */
     closewindows();
}
```

If you have any C-related questions, write to Mac at: HiSoft C Centre, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW or send him an e-mail at: de36@dial.pipex.com.



Easy as XYZ? This month Frank Charlton, always a stickler for protocols, explains the various standards for sending and receiving files.

alt.comms.stf@

XYZ WHO?

Q I'm new to comms, and I'm more than a little confused by some of the jargon, to say the least! For sending and receiving files, the comms software I've looked at offers lots of what it calls 'protocols', such as X, Y and ZModem, plus others with esoteric names like YModem-G and Kermit. What do these all mean, and which is the best to use?

Tom Aiston, County Down

A *A protocol is simply a standard method for sending and receiving files. They need to be standardised so that comms packages across the different machine types can all talk to each other successfully. Let's run through them:*

XMODEM: *Comes in several flavours, including XModem-1K and XModem-CRC. They're all derivatives of the same protocol, and very old. Don't use them unless the BBS you're calling offers nothing else.*

YMODEM: *A more advanced protocol. YModem transfers automatically receive the filenames from the BBS, saving you lots of hassle. YModem is a batch protocol, so it can transfer more than one file in the same download, unlike XModem.*

YMODEM-G: *This protocol doesn't do any error checking – it relies on the hardware error correction provided by your modem. In practice, it offers nothing over YModem.*

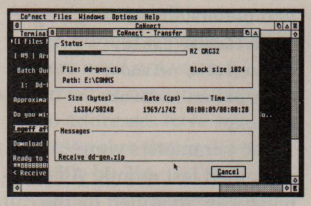
KERMIT: *An old protocol designed for mainframe computer use, Kermit is mainly found on large computer systems, such as those used by universities. You may need this protocol if you're connecting to your college from home, but most offer other choices.*

ZMODEM: *The best protocol available, without a doubt. It provides excellent error-checking, quality monitoring (ZModem make adjustments on the fly if transmission conditions deteriorate) and batch transfer. However, the best feature of ZModem is the way it can resume a failed or interrupted transfer at a later stage. If a bad line kicks you off a BBS right near the end of a huge file transfer, ZModem will restart the download from the point where you left off. All modern comms packages and BBS systems support ZModem – use it!*

STIK SEARCHES

As you may have noticed, the* Crystal Atari Browser (CAB – *previously* HTML Browser) *doesn't yet support HTML forms, so you can't enter any data. This makes it difficult to sniff out interesting pages with search engines like Yahoo. Kelley Rogers e-mailed us with this excellent advice:

You can search Yahoo by opening the URL:
http://search.yahoo.com/bin/search?p=keyword
Replace 'keyword' with the word you wish to search with.
In order to do a second search, you have to leave *CAB* and delete or rename the SEARCH_Y.COM folder in your cache folder.



Use ZModem wherever possible – it's the fastest and most reliable protocol.

STACKED UP

Q I have some experience with network programming at the BSD socket level on various UNIX systems. I have an ST and was wondering what the best TCP/IP stacks available for the ST are and what they are like to use.

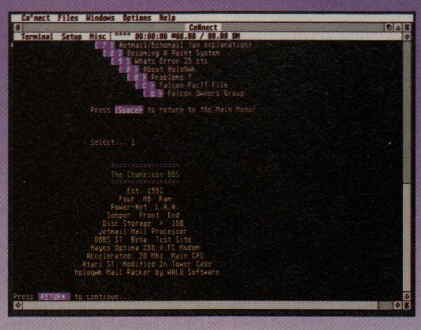
Dave Paul Beynon, via e-mail

A *Given your UNIX experience,* MiNT *and* MiNTnet *would seem ideal.* MiNT *is the multitasking extension to TOS which Atari adopted for* MultiTOS, *but it has since evolved in its own right.* MiNTnet *extends it even further by providing a set of BSD-style TCP/IP sockets which resemble the ones you're used to working with. There's even a portlib for use with* GNU C++, *making porting existing* UNIX *net software even easier – presuming you have access to the sourcecode. Point your browser or ftp client at:* ftp://src.doc.ic.ac.uk/computing/systems/atari/umich/Mint/Network/ *to pick up everything you need. Be warned though, a full installation – including the* MinixFS *filesystem which provides UNIX-like long filename support – really requires a dedicated hard drive partition.*

BBS SPOTLIGHT

The Chameleon BBS, run from Yate in Avon, *ST FORMAT*'s home county, is one of the UK's biggest Atari boards. SysOp Martin Stacey has ploughed a lot of money and time into the BBS, and it runs on an impressive ST setup, complete with a Local Area Network to other machines.

Chameleon is the development site for some excellent *QBBS*-related software, so if you're thinking of becoming a SysOp yourself, this is the place to look. It's also the centre of activity for a lot of mail networks, and has an absolute truckload of Atari files. Chameleon runs at speeds up to V34 and is on 01454 881095.



Don't forget, if you haven't got access to a modem yet, you can still drop Frank a line via old-fashioned snail mail. Write to: alt.comms.stf, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW, or e-mail your questions to: de18@dial.pipex.com (please put 'STA Comms' in the subject line).

Cyber Talk

FutureNet has recently been rated in the top five per cent of Internet sites. Find out what the fuss is about by pointing your browser at the *ST FORMAT* home page.

You've seen the ads over the last couple of months, but you're still a little unsure what FutureNet is all about. Allow me to explain. FutureNet is Future Publishing's rapidly expanding World Wide Web site.

Now, I know what you're thinking: why tell us about it? Well, it seems that at long last the new graphical browsers we've all been waiting for are on their way (see the Web of Intrigue feature in *STF* 76). So, why not start your Internet travels with a trip to FutureNet?

What's on offer?

FutureNet includes features, news, essential contacts and links for all of Future's 30-plus magazines, including *.net*, *The .net Directory* and, of course, *ST FORMAT*.

You can take out a subscription to your favourite magazine, order back issues and even take advantage of special reader offers, all from the comfort of your ST keyboard. You needn't worry about evil hackers getting hold of your credit card details either, as FutureNet's server utilises encryption software to prevent Internet fraud.

Then, having stocked up on bargains, you can sit back and fill your noodle with the day's Computing News. Or, if you prefer, you can check out FutureNet's World News, which is also updated daily.

Or what about having a natter with other like-minded souls via the magazine's chat forum? Yep, it's coming soon to FutureNet, so if you want to stay in touch, stay connected…

Karen Newell.

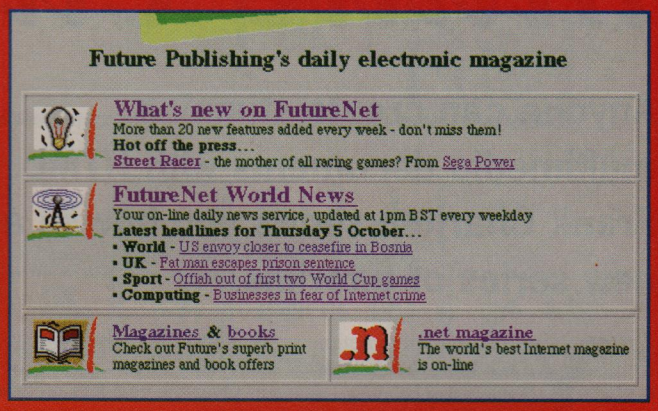
NEW FTP SITE

Not content with being the most successful commercial World Wide Web site outside the USA, FutureNet is now dipping its toes into the realms of ftp (file transfer protocol) sites.

The new site will enable us to put all the software and files that we can't squeeze on to the Cover Disk on to the Net, for you to download at your leisure.

To take a gander at what's available, point your Web browser at ftp://ftp.futurenet.co.uk/incoming/futurenet/. If you're using ftp software, type in: ftp.futurenet.co.uk and go to the directory /incoming/futurenet/.

ST FORMAT DIRECT



Okay, so you know what FutureNet offers generally, but what's available for hard-core Atari buffs?

● Features
It's all here in our bite-sized features guide – everything from making music on your ST to the hardware and software behind the CD-ROM revolution.

● ST Answers
Dr Clive Parker and the gang crowd into the cyber ward for insane STs… and their owners. Whether you're troubled by viruses, assembly code, comms or badly-behaved STs, this is the place for you.

● Machines of the future
We take a closer look at the latest Atari clones, GeSoft's Eagle and C-Lab's Falcon Mk2, and ask whether they have what it takes to topple the TT and Falcon.

● Hands on
Discover exactly how to take your ST or STE apart – and put it back together again – with our practical guide to fitting a composite video port. Or how about designing your own 3D game? We show you how.

● E-mail the team
Now you can get in touch with the team that produces *ST FORMAT*. Whether you want to pose technical queries, suggest features or send us compliments, you're only a mouse-click away from our desktops.

● Bargains
Order a back issue, submit a subscription or take advantage of our reader offers, all without ever leaving the comfort of your ST.

With over 100,000 hits every day, FutureNet is one of the most popular Web sites in the UK. Point your Web browser at http://www.futurenet.co.uk to find out why…

HTML coding made easy

Anyone can create stunning multimedia documents with HTML. Frank Charlton shows you how in a new series of tutorials.

You can't fail to notice the World Wide Web these days – every man, woman, child and pampered pet seems to be rushing to get their Web pages on-line. Whether you're a home user, a local club or a big, global corporation, the World Wide Web is definitely the place to be.

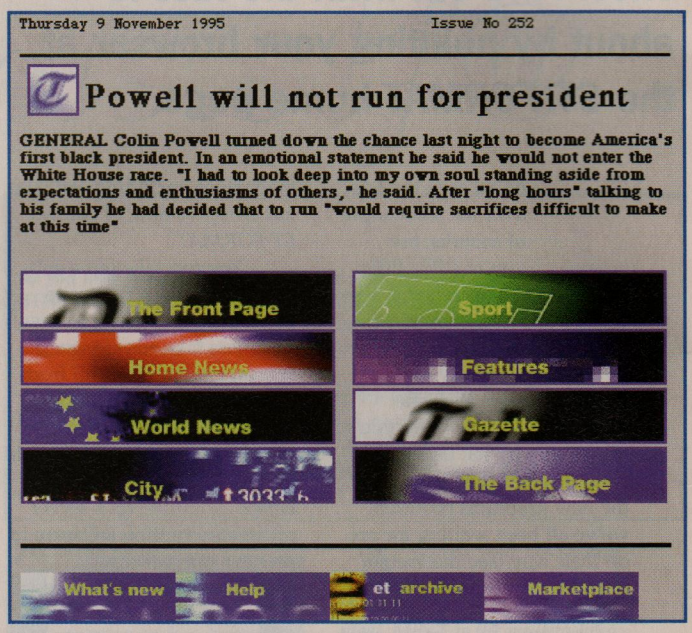
If you don't have Internet access, or even a modem, you might be wondering what all the fuss is about. However, creating a Web page can still be both enjoyable and useful, even if you wouldn't be seen dead strutting your stuff on the cyber dance floor of the Net. Check out the Not On-line panel for some examples and ideas.

Over the next few months we'll be showing you how to create your very own Web pages, starting from the raw basics. By the end of the series you'll be able to create a full set of attractive multimedia documents, complete with hypertext links.

Web slinger

Web pages, otherwise known as HTML documents, are simply text files. All the special effects – bold and italic text, rules, pictures and so on – are added using HTML, or HyperText Markup Language.

Now, before your eyes start to glaze over at the thought of tangling with yet another set of difficult-to-learn commands, let's get one thing straight – HTML is not a programming language. It's essentially a page description language, and it tells the view-

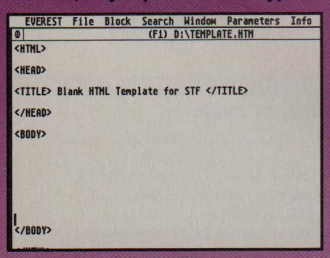


The Daily Telegraph now produces an on-line electronic edition – could the Net one day replace traditional paper publishing? *(I seriously hope not! – Karen)*

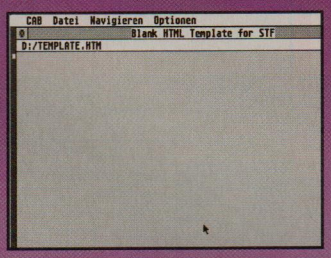
TAG, YOU'RE IT!

About 90 per cent of an HTML document is simply plain text. If you were to load a normal ASCII file into a Web browser, you'd see it displayed normally. The extra features available in HTML, such as bold or italic type, large headings and even embedded images, are all created using HTML tags. A tag is simply a short command, or pair of commands, which tell the browser to display a piece of text in a certain manner, display a picture file, or jump to another hypertext link.

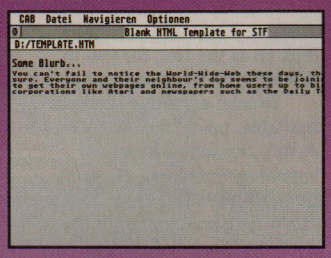
This step-by-step guide covers the basic construction of an HTML document. Tags usually appear in pairs, with parts of the document in between. The first tags you'll see are simple: <HTML> and </HTML> tell the browser where the HTML document starts and ends. The first tag toggles an effect on, and the second, beginning with the / character, switches it off – this principle applies to all tags you'll be using here. So, let's get down to it.



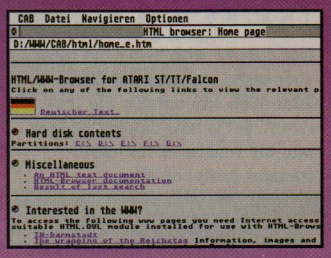
1 A good starting point is to create a blank template, which you can reuse for all of your pages. Open your text editor, and create a document which looks like the one in the screen grab. Note that HTML tags don't need to be in upper case, although it's common practice to type them like this. The same applies to the blank lines between some of the tags – they're purely to make it more readable.



2 You've had your first experience with writing HTML tags – easy, wasn't it? Next, save your new file and load it into *CAB*, the Web browser on the Cover Disk. If you've followed the example, you should see nothing more than a blank window, with the phrase 'ST FORMAT Example 1' along the window's title bar. If you see stray text creeping into the actual window, it's possible you've mistyped one of your tags.



3 An HTML page is broken down into two sections, the header and the body. As you can see from the example, <HEAD> and </HEAD> define the start and end points of the header, and the <BODY> </BODY> tags do the same for the main part of the document. Next, type in some text on the blank lines between the two <BODY> tags, and save your file. Load it into *CAB* and you'll see something like this.



4 A fully featured HTML document can contain images in the 256-colour GIF format. A common touch is to use small images as 'bullet points', as shown in the example page here – they don't do anything other than decorate the page, and break up the text. You can also add clickable sound samples too, using separate 'helper' programs. We'll be covering all this next month. In the meantime try out the different text effects.

NOT ON-LINE?

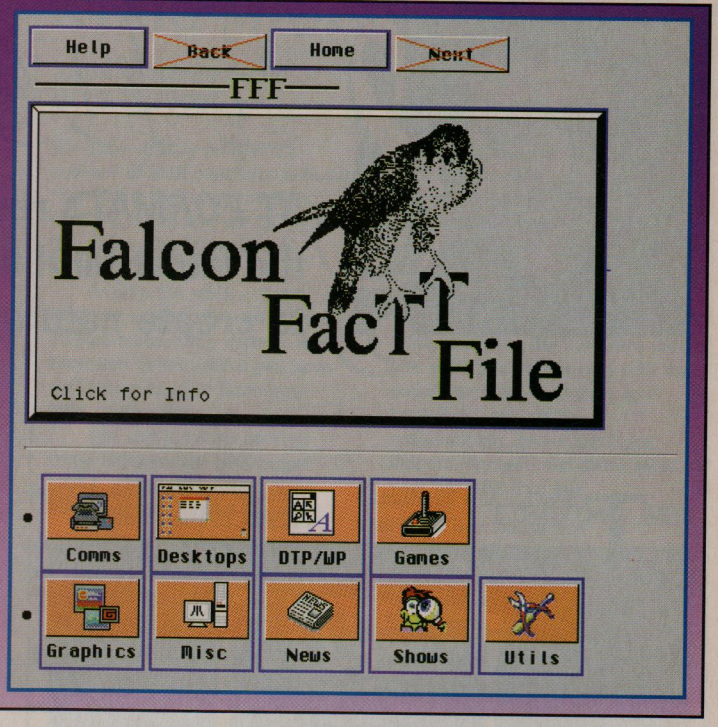
You may not have a modem, but the ability to create HTML documents is still a useful skill. After all, if you do ever decide to go on-line, you'll be able to create Web pages which can then be accessed by over 20 million people.

Even if you've got no interest in comms, HTML is an excellent way to produce attractive multimedia documents on disk. These documents can be read by anyone with a Web browser, and since HTML is the same whichever computer it's running on, with a little extra work your documents could be accessible to PC, Amiga and Mac owners as well.

You could easily create a disk magazine aimed at a specialist market, such as a programmers' magazine, a sci-fi fanzine or even a user group newsletter.

For example, the Falcon FacTT File newsletter, which is produced by Colin Fisher-McAllum and Kev Beardsworth, is distributed as a set of HTML documents. The Falcon FacTT File previously used *ST-Guide* to produce monthly hypertext updates, complete with news and reviews. Nowadays, however, it's produced in HTML format, meaning it can be made available to both its on-line and off-line members.

The latest news is that the FaST Club's subscription magazine *ST Applications* is also making the switch to HTML, after years as a traditional paper magazine. HTML is colourful, interactive and a lot easier to learn than *ST-Guide*, so follow the lead of the Falcon FacTT File and FaST Club and get writing those HTML documents!



The compilers of the Falcon FacTT File newsletter know that HTML is an easy way to produce smart multimedia documents.

ing program – in this case your Web browser – how the page should look. It's nowhere near as complex as Postscript, so you don't need expensive software to produce it.

Tag know-how

If you're a complete beginner, read through the Tag, You're It! panel to find out how HTML formatting works. Once you have created a simple template, you're ready to investigate some of the commands for altering the way your text looks. These text formatting tags are the easiest parts of HTML to remember, and you'll use them a lot.

For each example, you need to enclose the text you want to format within the pair of tags:

```
<B>This text appears in BOLD</B>
```

This text appears in BOLD

```
<I>This text appears in ITALICS</I>
```

This text appears in ITALICS

You can mix and match tags as you like, so using:

```
<B><I>Hello</B></I>
```

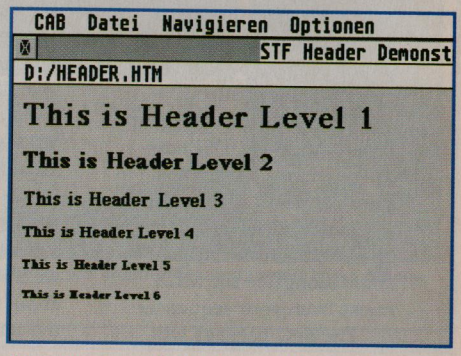
will produce:

Hello

One of the most common mistakes when you're writing your first HTML documents is forgetting to close a tag. As you can imagine, not closing a bold tag somewhere near the start of a page will have ugly results – unless you want your entire document be **loud and difficult to read.**

Unfortunately, the only way to check for these mismatched tags is by hand. When you view the document with your browser, it will be obvious that something is missing, but you'll need to go back and examine your source document carefully to find the problem.

This leads on to a handy tip: to begin with, save and check your document frequently. Don't be tempted to produce a huge document without checking it, as mistakes will be much harder to spot. The maxim 'little and often' applies, at least until you're confident.



Here you can see the Header tags <H1> through to <H6>, and the effects they produce.

You will also see a lot of header tags on Web pages. Headers are basically like the small headings we use to separate paragraphs in *ST FORMAT*, and they're easy to create. They come in six sizes, with a level 1 header being the largest. A header tag looks like this:

```
<H1>This is a Big Header!</H1>
```

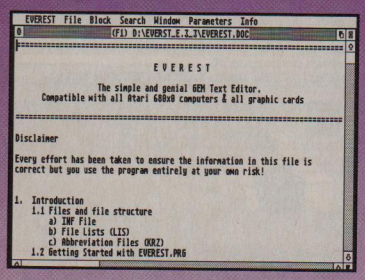
Headers always appear in emphasised (bold) text, and they are useful for breaking up different sections of your page. As with most HTML effects, you should use them sparingly for the best results.

Next month we'll start guiding you through the process of creating a full multimedia document. We'll also be showing you how to add graphics to your pages, and looking at hypertext links. *stf*

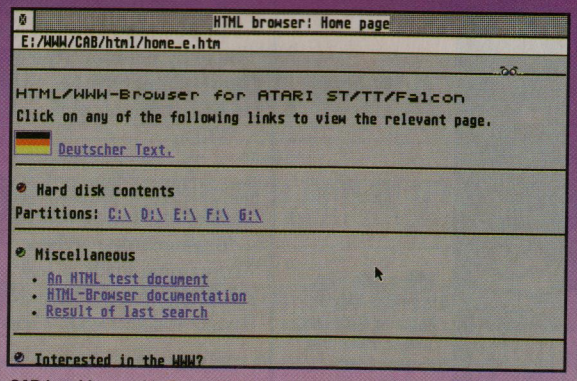
WHAT YOU NEED

To follow this series at the most basic level, you'll need the following programs:

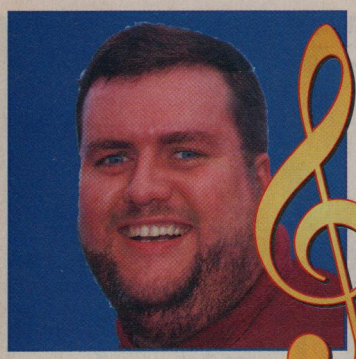
- A text editor which can save normal ASCII files. *Everest* and *7-UP* are both suitable, but why not use *Pen Pal from* this month's Cover Disk?
- If you want to include graphics in your pages, you'll need an art package to create them, and a conversion tool to change them to the GIF format. *ImageCopy* (£39.95, FaST Club) is the best, but the shareware *GEMView* will do.
- A Web browser to view your finished work. We've thoughtfully provided the best ST browser, *CAB (Crystal Atari Browser)* on this month's Cover Disk.



You need a text editor that can save ASCII files for HTML coding.



CAB (on this month's Cover Disk) enables you to view your HTML files.



The Score

ST FORMAT's resident DJ, Andy Curtis, checks out the latest MIDI file helper disks and shows you how to create natural-sounding guitar effects. Hurrah!

Digital wonder

There's a new product, designed and built in the UK, that's set to revolutionise direct-to-disk recording for Atari users. It's so radical, in fact, that the company producing it has asked to remain anonymous for the time being, because it believes otherwise its switchboard would be flooded with calls from would-be buyers before the new kit is available.

The forthcoming Digital Signal Processor (DSP) cartridge will make it possible to use a conventional ST with an external hard drive to record up to four tracks of digital audio alongside the MIDI tracks from your sequencer.

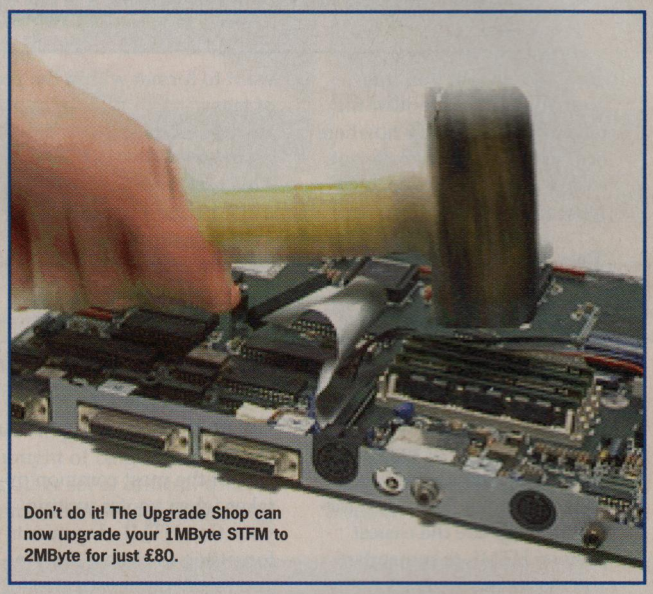
The new package will offer, for the first time, budget-priced CD-quality digital recording on your ST. ST users with a standard hard disk and at least 2MByte of RAM should be able to plug in the hardware and start recording straight away. The price has not yet been finalised, but the full software and hardware package could be on sale for a well under £500 by March 1996. It certainly looks like being a major leap forward for MIDI and music on your faithful old ST.

Expect to see a full preview when more details are available, and at that point we'll be able to reveal more about the company developing the cartridge.

CHEAP STFM MEMORY

Upgrading the memory of your STFM has, in the past, been a tricky business. The internal chip configuration makes some STFMs very difficult to upgrade, but help is at hand – The Upgrade Shop is now able to offer a guaranteed upgrade from 512K or 1MByte of RAM to 2MByte, regardless of STFM type. Once you've upgraded, you'll be able to run most, if not all, ST sequencing software.

The upgrade price of £80 includes courier pick-up and return, and you can reach The Upgrade Shop on ☎ 01625 503448.



Don't do it! The Upgrade Shop can now upgrade your 1MByte STFM to 2MByte for just £80.

JUNGLE PATTERNS 1

£9, Newtronic Songware, ☎ 0181 6911087

The latest dance innovation, Jungle music, features wild and complex rhythms running at fast tempos. If you want to produce your own Jungle music tracks, this release from Newtronic could be just what you need.

The disk contains a wealth of grooves which you can cut and paste into your own music. Because of the complexity of the rhythms, however, you'll need to assign two General MIDI specification drumsets on different channels to get the optimum effect.

We're not really dance enthusiasts here at *ST FORMAT* (which is undoubtedly a blessing for rave events up and down the country), but these sequences sounded pretty authentic to our untrained ears. If you're interested in Jungle music, you could do a lot worse than splash out a measly £9 on this disk.

***STF* RATING: 81%**

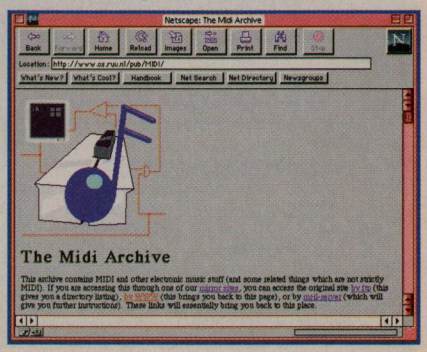
With a little help from the Jungle Patterns MIDI disk, Jungle music can be produced on your ST.

MIDI Web page

With the emergence of *CAB* (see this month's Cover Disk), the wide world of the World Wide Web is now open to you. One of the best MIDI sites is The MIDI Archive, which is run in the Netherlands by Piet van Oostrum. You can get there by pointing your Web browser at: http://www.cs.ruu.nl/pub/MIDI/.

The site provides all kinds of interesting links, including a comprehensive documentation archive, containing loads of text files all about MIDI hardware and software. There is a collection of synth patches and MIDI programs, and a list of good MIDI literature, too.

You will also find a number of links to other MIDI World Wide Web sites and archives. If you are at all interested in MIDI, this site is sure to please.



The MIDI Archive is stuffed full of all things music and MIDI. Give it a whirl – you won't be disappointed.

Quick questions

SY99 EDITOR?

Q I have a Yamaha SY99 keyboard which I love. I was wondering whether there was a full patch librarian and sound editor package available for ST users – my music shop says there isn't. Any information you have on the subject would be most welcome.

Alex Semmel, Brighton

A *Good new, Alex, Newtronic Songware (☎ 0181 6911087) distributes an SY99 editor called* System99. *It offers full patch editing and librarian features in an easy-to-use package. You will, however, need a high res monitor to run the software. Give Newtronic a ring if you want a demo version or the full package.*

MIDIPHILES

Q I am a MIDIphile, and I just love playing with other peoples files. In the past you have put one or two MIDI files on your Cover Disk, but why not put a load of them on? Loads of people collect them and they're not too big to fit on the disk. Not everyone can afford to buy them as they can be quite expensive, so give some away on the disk, it will make lots of people buy your mag.

Justin Clark, Warrington

A *We'd love to put some commercial MIDI files on our Cover Disk, Justin, but due to the current copyright restrictions it would cost us a fortune. Don't worry, though, we have a special treat lined up for MIDI file fans very soon. Watch this space.*

System99 provides everything you need to hack the sounds on a Yamaha SY99 keyboard.

ATARI MIDI 3 INTERFACE

£169, Harman Audio, ☎ 0181 2075050

We have already reviewed a number of MIDI expander boxes in The Score, including the MM1 (*STF* 76, 75%) and the MO4 (*STF* 73, 89%). This latest one is Steinberg's offering.

As with the others, it only works in conjunction with *MROS*, *Cubase's* operating system. It is therefore only useful if you have *Cubase* or another Steinberg MIDI application.

The unit provides another three independent MIDI output banks, giving you a total of 64 MIDI channels. Unlike the other expanders, it also has a MIDI input socket, effectively giving you a MIDI merge facility (MIDI merge enables you to plug in two MIDI input devices at once, so you can switch between a keyboard and MIDI drum pads, for example, without having to pull out all the plugs first).

Simply copy the supplied *MROS* driver into your *MROS* folder and plug the hardware unit into your ST's printer port with the supplied cable. Next time you boot *Cubase* it will be automatically detect the extra outputs, and you can throw away your old MIDI thru box.

***STF* RATING: 88%**

Steinberg's neat MIDI expander not only provides three extra output banks, but also enables you to input MIDI.

NATURAL SOUNDS

While many modern synth modules and keyboards have very natural-sounding voices, the keyboard player must still play those voices in the style of the original instruments. Anything remotely keyboard-based presents no problem, but what about flutes, trumpets, strings and, of course, guitar? This occasional series will teach you to produce natural instrument sounds using a keyboard.

Acoustic guitar

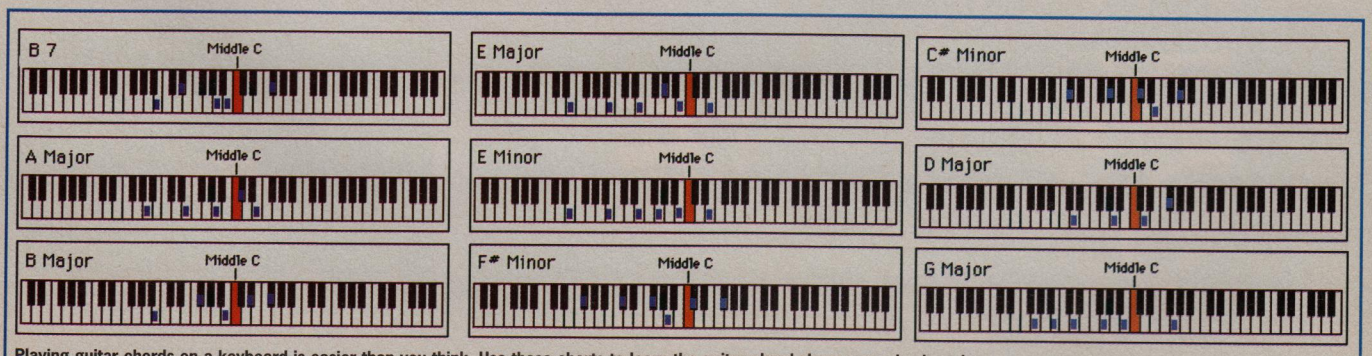
The most obvious way to create guitar effects is to buy a MIDI guitar pick-up. If you have the playing skill, the world is your oyster.

However, if you want to create simple guitar effects and have no guitar-playing experience, there are two avenues to explore. The first is to invest in some of the many guitar effects MIDI disks. These present you with riffs and flourishes which you can cut out and paste into your own sequences, remembering to change the pitches accordingly. This method is fiddly, though, and is unattractive from a compositional point of view.

The other option, which is also (conveniently) the cheapest, is to learn how to create your own simple guitar effects with your keyboard. The trick is to know which note combinations a guitarist would use and duplicate them. In the chart below you will see some common guitar chords mapped out on a conventional piano keyboard. If you learn these combinations of notes, your playing will sound a great deal more authentic.

Guitarists use a capo to transpose their music upwards, and we can do the same thing on a keyboard. Simply transpose the shape for E major up a semitone in order to play in F Major. However, if you have learnt the notes for E major, it may be advisable to play your piece in E and then transpose the whole piece.

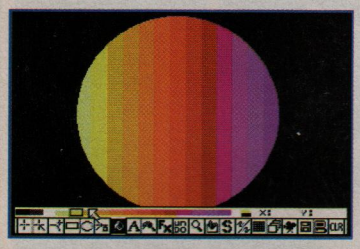
A good guitarist can vary the order in which notes are plucked, but there are some natural patterns which emerge. If you acquire a little background knowledge, you will soon be able to play along in real time to your music, just as a guitarist would. The result is that your music will sound more natural, and it will take on some real sparkle.

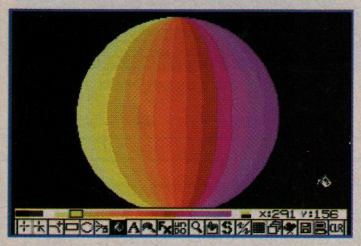


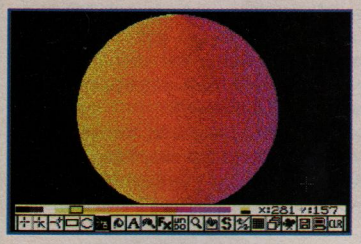
Playing guitar chords on a keyboard is easier than you think. Use these charts to learn the guitar chord shapes on a keyboard.

Mastering Deluxe Paint

Last month our Cover Disk held the complete and unrestricted version of Electronic Arts' *Deluxe Paint*. This month we take a closer look at just what this beauty can do.







Above is an example of the standard graduated fill. Here we've chosen the conform option with a diffused fill.

Deluxe Paint drew copious amounts of praise when it was first released, including a whopping 96% score from us. Since then it has become the ST paint package by which all others are judged, and last month we gave away the full version on our Cover Disk (if you didn't get a copy, turn to page 69 and order your copy now).

Although we gave you a quick run-down of what all the icons do in issue 77's Cover Disk pages, it's the kind of program with which it pays to experiment – it can do some very clever things.

Colour tricks

Right-click on the palette icon, the one with the box of crayons on it, to open the colour tools. At the top is your palette. To edit a colour, click on it and move the row of sliders. As with any paint package, you can adjust the red, green and blue elements of each colour. You can also alter the Hue, Saturation and Value sliders. Hue is the actual colour, it runs through all the available colours at the set saturation. Saturation is the amount of any colour, moving it to maximum will give you bright primaries, while its minimum setting gives you a washed-out look. Value sets the amount of black.

The Swap and Remap commands make it easy to arrange your palette's colours. Select a colour, then click on Swap and choose another colour. The two colours swap over, effecting your picture. So if you swap yellow and red, everything in your picture that was yellow is now red and vice versa. The Remap command does a similar job, but it also swaps around the colours in the picture for you so it remains the same. Effectively, it enables you to re-order your palette, without altering your picture. Copy copies one colour value to another.

Spread is another very powerful function. It automatically creates an even spread of colours between any two you have chosen. Define two colours, then select one and click on Spread, now click on your second colour. Bingo! A range of tints between the two defined colours is created. You can define up to four separate colour ranges.

These colour ranges are used by colour cycling and graduated fills. The currently selected range is shown by a little line joining two colours. To define a range just select a colour and click on one of the numbered colour ranges, then select the second colour. When you want to start or stop the colour cycling hit [Tab].

It's easy to loose track of which colours you've used while working on a picture, which makes it tricky if you want to define a new colour. *Deluxe Paint* offers a neat solution to this problem. Just click on Used, and any colours you haven't used are set to black.

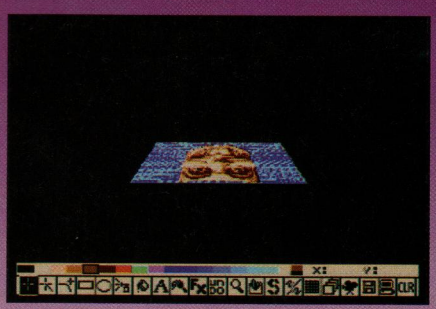
PICTURE FORMATS

***Deluxe Paint* can load pictures in Neochrome, Degas Elite PI1 and PC1 formats, but it also has its own much more useful IFF format. IFF images are compressed, so you can fit more pictures on a disk. It can also cope with animation – one IFF file can contain any number of frames.**

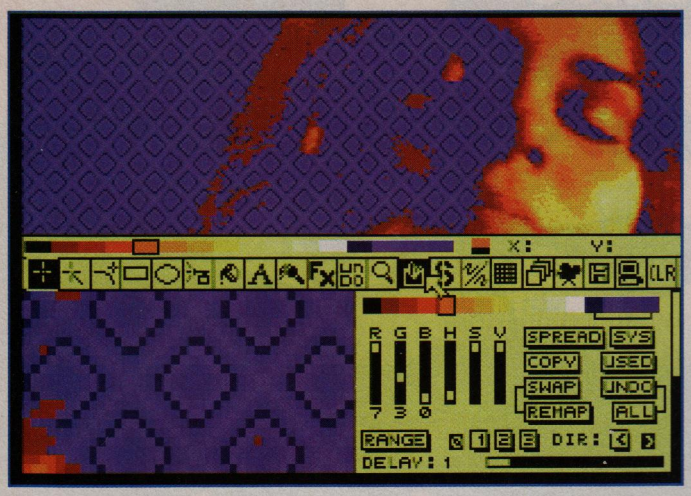
THE FACE OF ANIMATION

Let's send this chap into a spin. *Deluxe Paint's* tweening animation is powerful and enormous fun. What more could you ask?

Enter a few numbers into the Tween controls and he'll spin all over the screen. The preview enables you to view any sequence before committing yourself.



And off he goes, executing a perfect 360 degree spin as he disappears into the background. Demo junkies love this sort of thing.



Painting is all about colours and *Deluxe Paint* gives you loads of control over them, including stencilling, graduated fills and colour cycling.

Sys gives you the default palette, while Undo enables you to undo any changes made to one or more colours.

It doesn't stop there. You can also stencil colours. This is a wonderful feature, as it prevents you from painting over any colours you define. Say you've drawn a rather fetching bunch of red flowers, but you now want to paint some green foliage behind them. No problem, just right-click on the S icon and highlight any colours you want to protect, in this case the reds, then click on Colours below Stencil. The buttons below the palette enable you to select all or none of the colours in your current colour range.

You can also stencil the foreground, so you can only paint on the background. Alternatively, if you're happy with your background, you can load the picture, select Fix, which is under the Stencil menu's Background option, and save it as a complete picture. If you now use this image as your background, you can experiment with foreground elements as much as you like – the picture underneath remains intact.

Smooth Stuff

Anti-aliasing is a clever way to get rid of the jaggies you get when two highly contrasting colours meet. The success of the effect depends on your palette; your ST needs a range of colours in between the two you are trying to blend to work effectively. Open up the list of FX functions and select Smooth (or press [F8]), now when you paint the colours will blend automatically. It's still a little fiddly to go around all the edges by hand, though, so why not try this trick? Use the Brush to cut out the section you want to blend and select Smooth. Now paste your brush directly over the top of itself, click once, and the whole lot is blended perfectly in one go. Groovy, eh?

Graduation Day

Graduated fills are a quick and easy way to get impressive results. First draw yourself a shape of solid colour, then right-click on the palette icon to access the colour controls. You need to define the range of colours that your graduated fill is going to use – you can use the Spread function under the palette controls to create one quickly.

Now right-click on the Fill icon, the one with the dripping paint can on it, highlight the Gradient button and click on your shape. If you select the Conform option, your graduated fill follows the outline of your shape. The bottom slider diffuses the pattern, while the Angle function sets the direction of your fill.

TOOLS OF THE TRADE

Left-clicking on an icon selects that function, while right-clicking opens up the parameters box. *Deluxe Paint* contains all the tools you've come to expect, such as box, circle, line, cut and paste and fill.

Move it

Deluxe Paint also boasts a rather wonderful animation section. At its most basic, it enables you to paint a series of pictures and display them one after the other, but it also provides a sophisticated tweening function that enables you to create animated graphics with ease. Simply define the start and end position of a block and *Deluxe Paint* works out all the frames in between. You can even move the block in three dimensions, rotating it around each of its axis.

First you need a block with which to work. Load an image, select the brush icon and use the cross-hairs to cut out the block you want to animate. Now clear the screen. If you want a background, load it now, but remember it must use the same palette as the block you want to animate.

To create the frames, right-click on the animation icon (the one with the film camera on it), and select the number of frames. If necessary, you can clear the field using the [Esc] key, then type in a new number and hit return. The number of frames you can have is limited by your ST's memory. This will fill up rapidly, since every picture you load into the buffer will automatically be copied to every frame.

Now right-click on the Tween icon, the one that looks like a stack of squares, and you can start defining your animation. There are two sets of parameters, the position of the block at the start and end of the animation. These are known as the From and To sets. Each set contains six possible values. X and Y govern the horizontal and vertical position of the block. Z denotes the third axis, the in-screen depth. A positive value moves your block back into the screen, while a negative one moves it towards you. The rotation values, which are measured in degrees, spin your block along the three axis. Entering a value of 360, for example, gives you a complete revolution.

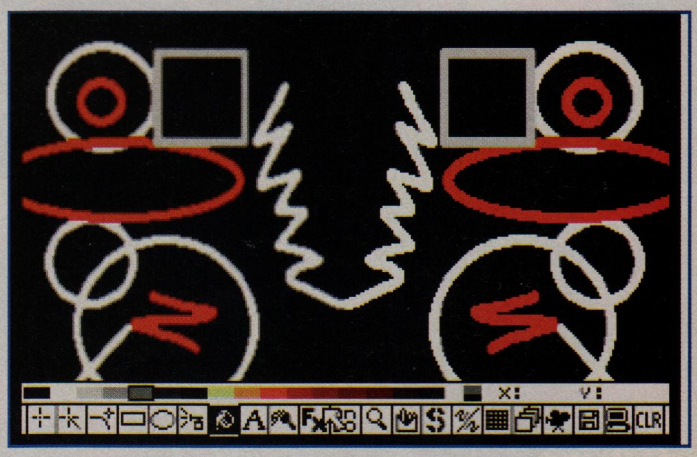
Change the Z value to 1,000 in the To section and the X rotation to 360. Now click on the Preview button and you are treated to a wire-frame view of your block tumbling towards you. You can experiment as much as you like, previewing each effect. When you've got the look you want, click on Tween and your ST starts to generate the frames for you.

The animation uses all the frames you've created by default. If you want to alter this, adjust the Count value in the Tweening controls. You can also use the Frame parameter, which is under the Count value, to alter the frame from which the animation starts. Once you get to grips with it, the Tween function enables you to create stunning animation. Try it, you'll like it. *stf*

CHRIS LLOYD

STE CONTROLS

One of *Deluxe Paint's* strengths is the amount of control it gives you over the palette. It makes full use of the STE's 4,096 colours, so if your ST sports the extra E, make sure you switch over to 4,096-colour mode. For some reason, access to this is tucked away under the About menu (the one with the little ST on it).



This is a mirrored image in which one half has been smoothed. The effect is particularly noticeable on the zig-zag line, where the white has been blended into the black

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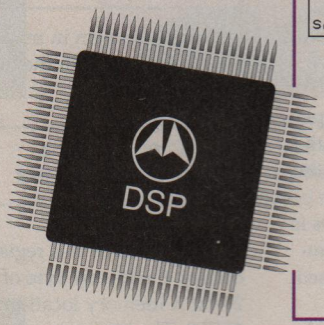
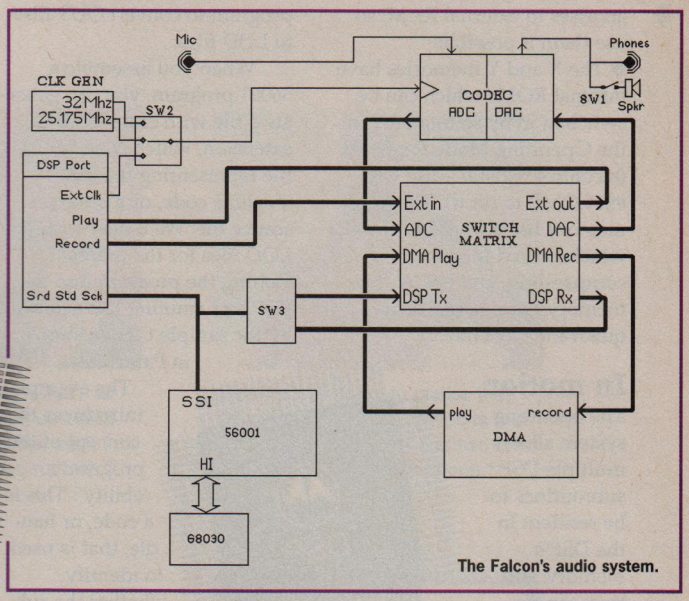


The Falcon's 56001 is wired to some nifty hardware. Paul Hills explains how everything works.



The Falcon's audio system.

The 56001 isn't connected to the screen or the keyboard in the Falcon, so how can we send data to it, and get answers back?

In the case of analogue signals, we do it through the CODEC (COder/DECoder), which is a combined ADC (Analog to Digital Convertor) combined with a DAC (Digital to Analog Convertor). It is connected to the DSP via a high-speed serial link, and to the outside world through the Mic and Phones connectors and the speaker.

For digital data, the 56001 and 68030 are connected through the Host Interface Port. Before we go any further, look at the diagram above, which shows how the Falcon is organised internally.

Let's analyse the block diagram. The Switch Matrix (centre) is physically inside the SDMA chip. Each of the thick lines going in and out of it represents three wires, a clock signal, a data signal and a sync signal. The sync signal is used to mark the beginning of a frame of data.

The switch matrix can switch any one of its four inputs to any number of its outputs. It is controlled by the 68030, and a simple operating system call sets the switching.

The CODEC is a crystal semiconductor CS4216 device. It is a 16-bit stereo ADC and DAC combined, capable of sampling rates up to 50KHz. It is connected to the switch matrix rather than directly to the DSP, enabling any of the sound sources to drive it, and thus ultimately enabling them to drive the speaker or phones output. For example, the sound data could come directly from disc, via the DMA play input, to the switch matrix, and then on to the DAC and the speaker.

The L and R audio outputs of the DAC are sent to the phones connector, and are also combined and sent to the speaker amplifier. SW1 represents a switch controlled from a spare pin of the Programmable Sound Generator (as found on the ST) that can turn off the speaker if necessary.

The first thing to get to grips with is loading programs into the DSP

The DSP is connected to the switch matrix through its Synchronous Serial Interface. This is a high-speed serial link designed to communicate with industry-standard CODECS. The DSP communicates with the 68030 through the host interface port. This is an 8-byte memory-mapped port as far as the 68030 is concerned, with various data, control and status registers.

The clock generator simply selects a clock frequency for the CODEC. This can be 25.175MHz, 32MHz or an externally generated frequency from the DSP port. A simple operating system call sets the clock frequency. The actual sampling frequency is set using the same call.

SW3 is also physically inside the SDMA chip. It allows the DSP SSI port to be tri-stated using an operating system call. This means it is effectively disconnected from the switch matrix.

DSP memory

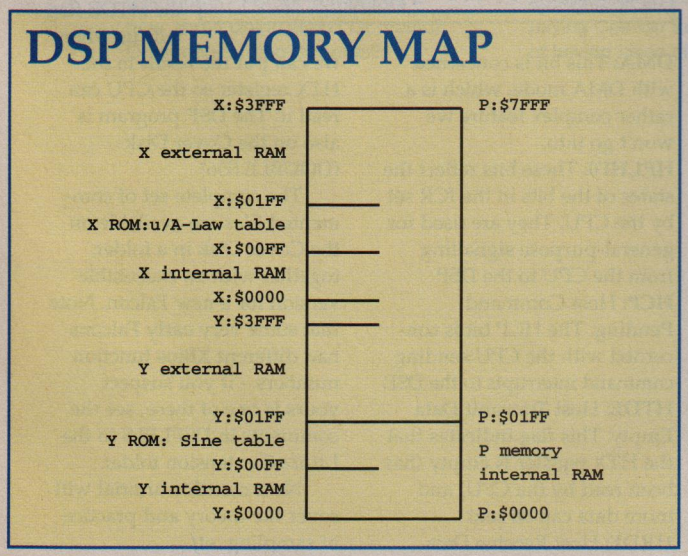
Unlike the 68030, the DSP has a fairly complicated memory map. For a start, as you already know, the 56001 has three memories: X, Y, and P. In most 56001 configurations, these would be in separate memory chips, but Atari has merged the three into one block of memory to keep costs down (see the DSP Memory Map panel for a diagram).

The X and Y memories are separate, but the program memory, P, overlaps X and Y. That means, for example, that anything in Y memory address $1234 also appears in P memory at $1234. Anything in P memory at $4010 will also be in X memory at $0010. Therefore it's up to you to make sure that your data and program don't overlap.

There are some things to note about each memory:

- The X and Y memories have 256 bytes of internal RAM from $0000 to $00FF, and the P memory has 512 bytes from $0000 to $01FF. Accesses to these are generally faster than

DSP MEMORY MAP



accesses to external RAM, so use them if possible.

● The X and Y memories have internal ROMs which can be switched in by setting bit 2 in the Operating Mode Register (a control register – use ORI #$04,OMR to set it). The X memory has a u/A-law table which is used in speech companding, and the Y memory has a useful four-quadrant sine table.

In motion

The operating system allows multiple DSP subroutines to be resident in the DSP's memory, and they can be used by programs that are multitasking. To make things simpler, though, let's just consider one DSP program that can be called by one main program.

The first thing to get to grips with is loading your programs into the DSP, running them, sending data to the DSP, and getting data back again. This is no mean feat.

All these operations require function calls in the DSP extensions to the XBIOS. If you do not have these extensions in your programming language, you will have to upgrade, or program them in 68000 assembly language. If you are using *Lattice C 5.52* or earlier, *Pure C*, *Turbo C* or *Prospero C*, there are extensions in folders on this month's Cover Disk (see page 6 for details). *Lattice C 5.60* already has the extensions.

All the calling code examples are written in C. If you are using the public domain DSP assembler, *A56*, supplied on the Cover Disk 74, there is a utility folder (OUTTOLOD) on this month's disk with a program to convert OUT files to LOD files.

When you assemble a 56001 program, you can generate a file with either a LOD extension, which is an ASCII file representing the 56001 machine code, or a binary source file. We'll deal with LOD files for the moment. Getting the program into the DSP and running it is achieved by the sample C code shown in Panel One.

The example introduces the concept of the program's 'ability'. This is a code, or handle, that is used to identify whether the subroutine is already in memory or not. It is most useful in situations where the 68030 is multitasking. For our purposes, it isn't worth worrying about.

Dsp_RequestUniqueAbility() gets an ability code for us. The Dsp_LoadProg function converts the LOD file into binary machine code, loads it into the buffer, sends it to the DSP and starts it running. The constant SIZE must be large enough to take the program.

Host interface

Now you have the program in the DSP, you need to send data to it, and get data back. This is done through the host interface port.

The host in the Falcon is the CPU, the 68030. These registers are mapped into the 68030's address space from $FFFFA200 to $FFFFA207. However, the operating system has functions to deal with all the data transfer on the CPU side so we don't need to know the details of that side of the host interface.

However, on the DSP side of the host interface we are on our own – there is no operating system to help us out. There are three registers:

Address	Register	Name
X:$FFE8	Host control register	HCR
X:$FFE9	Host status register	HSR
X:$FFEB	Host receive /transmit data register	HRX/HTX

Let's look at them in more detail, starting with the host control register:

Bit:	7	6	5	4	3	2	1	0
Flag:	0	0	0	HF3	HF2	HCIE	HTIE	HRIE

The eight bits of this register occupy the lowest byte of the 24-bit X memory location $FFE8. The bits are:

HF3,HF2: These flags are for general-purpose signalling between the 56001 and 68030. The DSP can write to them, and the CPU can read them.

HCIE: Host Command Interrupt Enable. This is used to cause a DSP interrupt when the CPU sends a command.

HTIE: Host Transmit Interrupt Enable. When this is set, the DSP calls an interrupt routine every time data sent to the CPU has been read by the CPU (when the HTX register has been read by the CPU).

HRIE: Host Receive Interrupt Register. When this bit is set, the DSP calls an interrupt routine every time new data has appeared in the HRX register from the CPU.

The host status register is also an 8-bit register:

Bit:	7	6	5	4	3	2	1	0
Flag:	DMA	0	0	HF1	HF0	HCP	HTDE	HRDF

DMA: This bit is concerned with DMA mode, which is a rather complex feature we won't go into.

HF1,HF0: These bits reflect the states of the bits in the ICR set by the CPU. They are used for general-purpose signalling from the CPU to the DSP.

HCP: Host Command Pending. The HCP bit is concerned with the CPU sending command interrupts to the DSP.

HTDE: Host Transmit Data Empty. This flag indicates that the HTX register is empty (has been read by the CPU) and more data can be sent.

HRDF: Host Receive Data Full. This flag indicates that data is available in the HRX register from the CPU.

These flags are used by 56001 programs to communicate with the 68030.

To the CPU

Let's use the flags shown above to send some numbers from the DSP to the CPU.

We'll deal with the CPU program first, in C, using operating system calls rather than accessing the host interface registers directly. Let's start with a very simple example. We'll send a value from the CPU to the DSP, the DSP program will double it, and send the result back to the CPU.

This can be achieved using the function:

```
Dsp_BlkUnpacked(long
*DataIn, long SizeIn,long
*DataOut, long SizeOut)
```

This function sends 32-bit data in either – or both – directions, depending on the values sent to it (out means out of the DSP). The 56001 only sends 24-bit data, so each 'long' (32-bit) value will have the top byte equal to zero. This program, DOUBLE.C, is also on the Cover Disk.

From the DSP side, we need to monitor the host interface to see when the data has arrived, and when it has, double it and send it back. The HRDF flag in the HSR tells us when data has arrived from the CPU, and the HTDE flag tells us when we can put the result in the HTX register so the CPU can read it. The DSP program is also on the Cover Disk (DOUBLE.S56).

The complete set of commented files are available on the Cover Disk in a folder, together with an executable version for a new Falcon. Note that some very early Falcons had different XBios function numbers – if you suspect yours is one of these, see the comments in DSPLIB.S in the *Lattice C* extension folder.

Next month's tutorial will cover the theory and practice of sampling. ***stf***

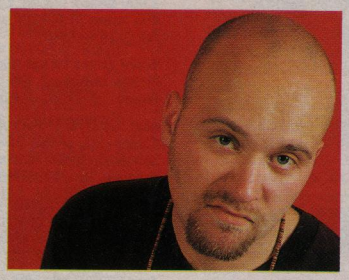
PANEL ONE

```
int ability;

void LoadProgramIntoDSP(void)
{
long Xavailable, Yavailable, len;
char buffer[SIZE];

ability = Dsp_RequestUniqueAbility();
len = Dsp_LoadProg("FILENAME.LOD", ability, buffer);
}
```

"The 'roar' of the engines sounds like a farting caterpillar, and the soundtrack comes straight from the jukebox of Beelzebub."



"Whinge, bloody whinge: that's all you do. 'That game took up 10Mb on my hard drive', or other such I'm-so-boring dribbly-nosed rubbish."

"Someone is going to realise that the only content on the Web is four pages about *Star Trek* and two filled with pics of Pamela Anderson."

"The PC beat-'em-up has finally come of age, and now it's on the streets. *FX Fighter* wants to know if it was you who spilled its pint."

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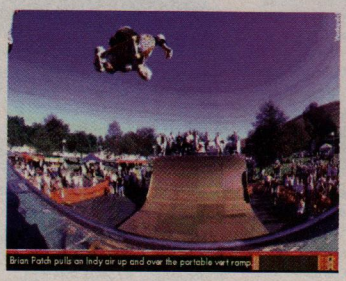
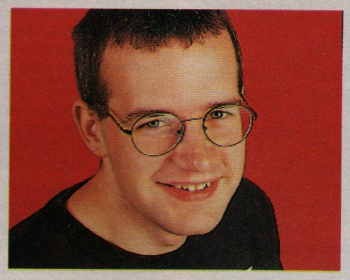
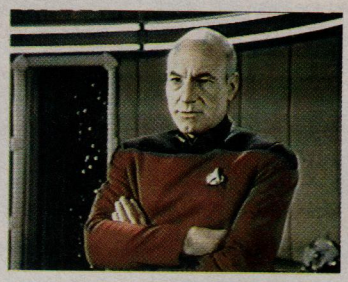


"What's going to be in PC Virgin this month? Forget computers – how about doing films? Or music? Or skateboarding? Or *girls?*"



"Before you know it you'll be applying for an e-mail licence and paying Opinion Tax for the privilege of having ideas of your own."



"The problem with *Star Trek* is that you could wrap a dog turd in a box, give it an official *Trek* licence and it would still sell by the bucketful."

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Vortex At Once – AT286 emulator upgrade for STFM £35. For details, tel Keith: 0114 2659253.

Atari Falcon 4MByte, 300MByte hard drive and SCSI kit, mono VGA monitor, tower case, Tabby, Forget-Me-Clock, 65 ST FORMAT magazines and disks, True Paint, NVDI 3.0, ImageCopy2 and loads more. £650 ono. Tel: 0115 9305013.

Atari STE 4MByte RAM TOS 2.06/1.62 second drive, 270MByte hard drive Phillips 8833 monitor, loads of software, £550 ono. Local delivery. Tel: 01704 547943, ask for John.

STFM with mouse, joystick, double-sided disk drive, lots of games/utilities, manuals, boxed, perfect condition. Bargain at only £99. Tel: 01902 842995.

Atari 520STE with 1MByte upgrade, Family Curriculum inc 1st Word, Crackart, a few games all boxed, excellent starter pack, £70. Tel: 01932 883557 (Weybridge).

Atari 500MByte SCSI drive and translator, software, software also on drive, £220 ono. Tel Lee: 0151 2840363.

STOS, the game creator. Original and boxed. Best offer gets it. Tel Chris: 01473 281609 after 7pm.

Falcon030 4MByte RAM, TOS 4.04, MultiTOS, Truepaint, SpeedoGDOS 5, Easy Text Pro Vector and books and magazines in good condition, £400. Tel Kay: 0171 737 0350.

STE 4MByte, HP310 Printer, Phillips and Atari monitors, 127MByte hard drive, external floppy disk, scanner, numerous quality programs and extras. Cost new over £2,000, sell for £500, no offers. Tel: 01257 422924.

Atari 520STFM, manual, mouse, joystick, software, magazines, £70 inclusive. Tel: 01935 25974.

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STE 1MByte, HD external drive, £150. Epson LX80/tractor, £50. Software, manuals etc. Tel: 01482 633192, evenings (Humberside).

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SyQuest 5.25-inch 44MByte removable hard disk cartridges, £25 each. Tel: 01343 830961.

Falcon owners: Videomaster and Colour Master, Truepaint, True Image, Papyrus Gold, Diamond Back 3, Ease, NVDI3 and more, £150. Tel: 0181 8542162 for details.

Atari 520STFM, mouse, joystick and SM124 monitor plus software, £130. Tel: 01962 854271.

Original ST games: Ishar Trilogy, Silent Service 2, Bloodwych, Wrath of Demon, F-19, Dungeon Master, Legend Knightmare, Captive and more. £4–12 each. Tele: 01943 875411 after 4pm, ask for James.

1MByte STFM, excellent condition, £1,500. Plus original software, plus second drive (needs new lead), joystick, mouse and accessories. £130 ono. Tel: 01943 875411 after 4pm. Ask for James.

Games: Jimmy White, Pirates, Bart vs Space Mutants, Robotic 2, Back to the Future 3, Gauntlet 3, The Godfather, Thunder Burner. All for £30. Tel Chris: 01473 281609 after 7pm.

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Atari 520STFM 1MByte upgrade. External drive, Citizen 120D printer, 70–100 games and other software including Timeworks. £300, or will separate. Tel: 01734 792276.

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Atari 1040STE – excellent condition. Boxed, two mice, two joysticks, lots of software. ST FORMAT magazines 58 onwards (including Cover Disks and Wonder Disks 64 onwards). All manuals, £200 ono. Tel: 01977 556120.

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MegaDrive for sale. Five games, including Theme Park and Micro Machines 2. All leads, one joypad, £110. Tel Philip: 0181 877 0182 after 6pm.

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Atari 520STFM, 1MByte CM8833 colour monitor, LC10 colour printer, mouse, joystick, Fastbasic cartridge, manual, STOS and manual. Boxed graphics, games and manuals, 66 cover disks. Magaziness, 1987–1995. £250. Tel: 0181 6741416, or answer phone: 0181 6719211.

1040STFM, Concerto M101 sequencer, other software, £110. Colour monitor £75. Mono monitor £30. Forget-Me clock £12. Mouse/joystick switch £8. Tel: 01483 766414.

STE 1MByte, external DS disk drive, Video Master, Ultimate Ripper, many games eg Elite 2, F1/GP, Civilization, PD software and cover disks. Tel Darren: 01634 234257.

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Atari 520STFM 1MByte RAM, Discovery Pack. Joystick/mouse, 19 games worth over £200. PD disks – boxed excellent condition, £150. Tel: 01923 835775.

50p–£5. Clearout 100+ boxed ST software. Something for every interest. Also 8-bit tapes and disks from 30p. Send a large SAE to: Mr D Loughton, 34 Collindale Ave, Erith, Kent, DA8 1EE.

Atari 1040ST, monochrome Atari SM125 monitor, colour Philips monitor, NEC CP6 Pinwriter printer, second disk drive, 230 3.5-inch disks – including Signum, Art Director, Degas, STOS, STAC, many games and lots more original software. Also books, accessories, paper etc. Total price £1,000, very clean and perfect condition. Tel: 01732 810640, evenings only.

I have MIDI leads coming out of my ears! SAE for list to: Ade, Flat 3, 69 Birmingham Road, West Bromwich, West Midlands, B70 6PY. Hi Darren!

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Back issues ST FORMAT, 20 issues between January 1992 and February 1995, with disks. Sensible offer to clear. Sensible Soccer 92/93 £9. Tel: 01326 564069 after 4pm.

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Hey, over here, for swaps: Microprose Golf and M1 Tank Platoon (boxed originals) for Cannon Fodder and Days of Thunder, to buy, sell or swap. Tel: Simon 01323 483948.

WWF, Skate Wars, Supercars will swap any for Sensible Soccer or Sensible Soccer V1.1, Operation Stealth, Thunderhawk or will sell. Contact: Shaun, 16 Banbury Lane, Kings Sutton, Nr Banbury, Oxon OX17 3RU.

Wanted/swap Atari high res monitor, SM124, SM125 or SM144, other hardware, cash waiting. Tel: 01884 257487.

Wanted Battle of Britain and Silent Service II. Sale or swap, Pacific Islands, The Patrician and Ishar all of which are boxed. Tel: 01977 647255.

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Do you have a copy of No Second Prize? Do you play it, or would you rather have a crisp tenner? Tel Chris: 01473 281609 after 7pm.

Wanted: Atari Works Package, Speedo Fonts, and any fonts or printer drivers for Calligrapher Pro. Tel Birnie: 0171 7063178.

Any bridge game for a 1040STE? Tel: 01922 442105.

STE (or FM), 1MByte DS drive and mouse, £50 ono. May consider whole system for good price. Tel: 01787 473401 evenings.

Atari 520 or 1040STE, 1MByte. Will pay reasonable price for full working machine. Tel: 01273 725253.

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Airbus 320 wanted, will swap for other games or pay. Tel: 01828 627793 after 6pm.

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Wanted to complete collection, issues 1 and 2 ST Review with cover disks. Good prices paid. Tel Tom: 01924 452100.

Imagecopy 3.5 complete on disk. Tel Paul with price: 0171 2194768, working hours.

Atari Robokit with manual hardware interface and software. Tel Paul with price: 0171 2194768, working hours.

Sub or battleship games for 520STE (not Hunter Killer of Bismark). Tel Rob: 01424 440523 after 6pm.

Calamus 1.09N with instructions, also ST contacts. Write to: Matt, 12 Moxon Place, Wakefield, WF2 8EN. 100 per cent reply.

Wanted: any good games eg: flight sims and fantasy like Dungeon Master. Also any hardware of any format or age, sensible price. Tel Oliver: 01262 468340.

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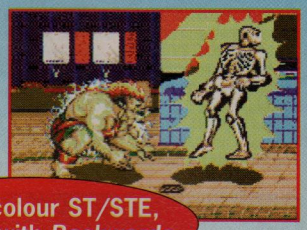

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Blast your way through this 3D space shoot-'em-up – *Zero-5* is all about wiping out the aliens before they blow you apart. It scored 92% back in issue 66, and combines fast action with accurate shooting and pleasingly violent explosions. Order your copy today, and prepare to do battle!

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Obsession is a technically brilliant re-creation of pinball that scored a massive 94% in issue 67. There are four tables, featuring magnets, kickbacks, overhead runs, combination targets and comments on how badly you played – it's highly addictive. Our reviewer described it as "one of the greatest ST games ever."

UDS followed up *Obsession* with *SubStation*, the first attempt at *Doom* on the STE and Falcon. It scored 75% in issue 72 and "holds its own as a 3D blast-'em-down," according to our reviewer. You must roam a dangerous underwater energy plant that's lost contact with the surface. *SubStation* also features the realistic DD-Audio 3D sound system.

Now you can get *Obsession* and *SubStation* together, for less than the price of the individual games! Just turn the page, fill in the form and get your order in today.

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SPEEDBALL 2

BITMAP BROTHERS

SEAL OF APPROVAL GOLD ST FORMAT

Speedball 2 is a fast, ultra-violent sports game. The futuristic matches are laced with gratuitous violence: you can tackle from behind, throw a player across the pitch and generally behave in an ungentlemanly manner. It's a much-loved classic, provides both one- and two-player games, and scored a whopping 94% in issue 54.

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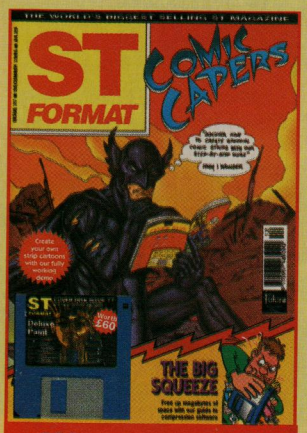
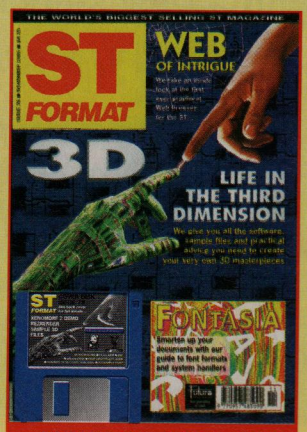


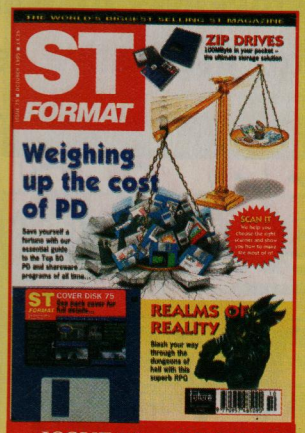
ISSUE 77 – DEC 1995

Disk: *Deluxe Paint, Strip Cartoon* demo **Inside:** Comic strips; compression; system software **Reviewed:** *GT-Look 2, MagiCMac, UVK 6.6* **Tutorials:** DSP



ISSUE 76 – NOV 1995

Disk: *Xenomorf 2* demo, *STarioland* demo **Inside:** 3D graphics; fonts; Web browsers **Reviewed:** *SARA, Protext 6.6* **Tutorials:** Backing up, DSP, boot disks



ISSUE 75 – OCT 1995

Disk: *Realms of Reality, SubStation level* **Inside:** PD Top 50; scanners **Reviewed:** Zip drives, *Imagecopy 4,* Exposé **Tutorials:** DSP, boot disks

ISSUE 74 – SEP 1995

Disk: *HyperGEM, Goin' Down, Bombs Away* **Inside:** Multimedia magic; printers **Reviewed:** *AudioTracker, Diamond Edge 2* **Tutorials:** DSP, boot disks

ISSUE 73 – AUG 1995

Disk: *Hollywood Hustler, Sweet Sixteen* **Inside:** Hard drives; Spotlight Show **Reviewed:** *Cubase Score 2 and Audio 16, Rainbow 2* **Tutorials:** *KIVI,* boot disks

ISSUE 70 – MAY 1995

Disk: *Team* demo, *Pablo Paint, 525 2.02* **Inside:** DTP guide; disk utilities **Reviewed:** *MaxiS hard drive, PAK 68/3, Prima HD/CD* **Tutorials:** Pablo Paint, World Wide Web

ISSUE 66 – JAN 1995

Disk: *Stardust, Endurance, Route Finder* **Inside:** Animation; ST First Aid course; DeskTopper **Reviewed:** *Metamorphosis, Zero-5, View 2* **Tutorials:** Pascal, *GFA Basic*

ISSUE 63 – OCT 1995

Disk: *Quill* and *HERO* demos, *Herman* **Inside:** *ST FORMAT* Golds; programming **Reviewed:** *Starball, Protext 6.5, Papyrus Gold, That's Write 3* **Tutorial:** *Papyrus*

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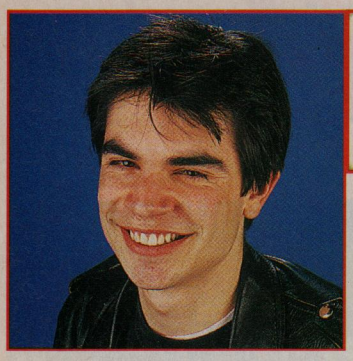
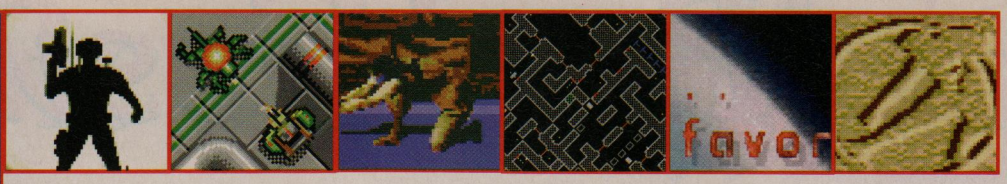
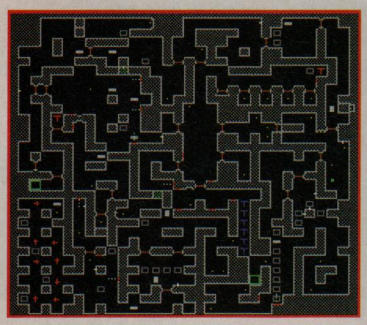




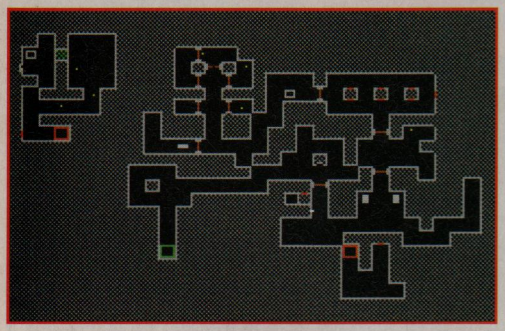
Nick Peers rolls down his fur-trimmed Christmas stockings to bring you a new selection of cheats for the festive season. Sherry, anyone?

Gamesbusters

This key reveals the location of all sorts of goodies within the *Realms of Reality* maps, shown below.



Realms of Reality – level one.



Realms of Reality – level two.

We don't mind whether it's for commercial, licenceware or PD games – if you have a tip, send it in to Gamesbusters, *ST FORMAT*, Future Publishing, 30 Monmouth Street, Bath, Avon, BA1 2BW. The more recent the game, the more chance there is that we'll print it. Alright? In the meantime, here are some cheats we received earlier…

Realms of Reality

We'll be featuring more levels and a character editor for *Realms Of Reality* on a future Cover Disk. For now, though, here are the maps for the first two levels, courtesy of author, Robert Megicks…

The Ultimate Arena

Thanks go to Robert Wilson of Swindon for discovering just how Arvester fires his gun and Joe cracks his whip in *The Ultimate Arena* (*STF* 74, 86%), the splendid beat-'em-up from across the Channel. Make sure you press [Fire] when directions are given in bold.

Terry
Double-kick: down, down, up
Fireball: **right, right, left**
Flurry punch: **down-right, up-left**
Supercut: **down-left, left, up-left, up, up-right**

Sandy
Flying kick: down, down, down, up
Flurry kick: **right, right, right**
Whirlwind chops: left, right, left, right
Energy bolt: **up, up-left, left**

Serena
Genius: **down-right, right, up-right, up**
Freeze: **right, right, right**
Sword slash: **right, left**
Sword throw: **left, down-left, down, down-right**

Kato
Back kick: **right, right, left**
Sliding kick: right, right, right
Disappear: **down-right, right, down-right, right**
Telepathy: **down-right, right, up-right**

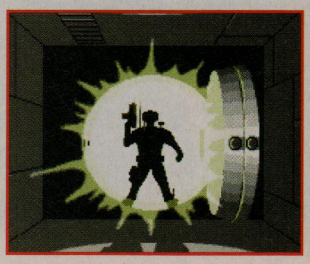
Joe
Whip: **down-right, right, up-right, up**
Whirlpunch: crouch, **up**
Throw hat: **down-left, left, up-left**

Arvester
Big punch: **down**, left, left
Bulldozer: left, left, **jump**
Fire pistol: **up, down, left, right**

Ahh, there's nothing like beating up your in-laws to relieve the odd bit of seasonal stress.

Alien Thing

It seems pretty unlikely, but if there is anyone who's still stuck on the original version of



Look out for our review of the Expert edition of *Alien Thing* next month.

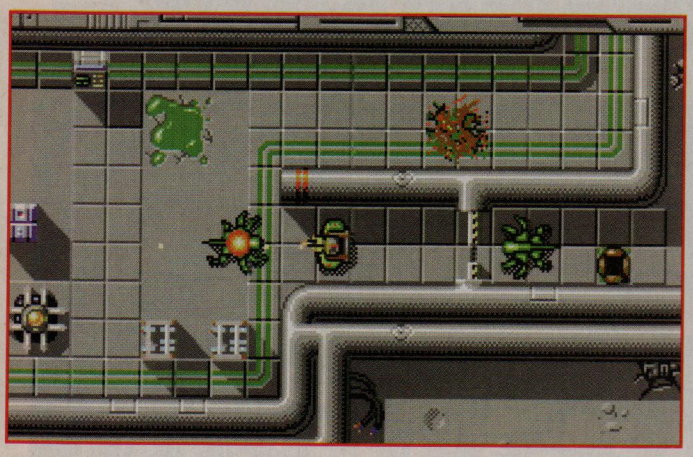
QUICKIES

- Those of you who felt STario was too slow in the demo on Cover Disk 75 will be pleased to know that holding down [Fire] while he's moving speeds him up.
- Joseph Palmer from Ipswich reckons that the Romans or Mongols are the best tribes to start off with in *Civilization*. He also favours playing with at least seven different civilizations, because that way you can quickly gain knowledge through exchange and conquest.
- Geoff Bowditch from Bexhill-on-Sea sent in this great tip to enable you to start *Speedball 2* (see page 68) with a fortune. Select a fresh game in one-player mode and save it straight away. Now load up a disk sector editor such as *Knife ST*, and load in the data from side 0, track 0. You should find the string $044C on the first line of that track. Alter this to $7530 which, when saved, will give you 30,000 credits – enough to upgrade the entire team to 220 points. (Make sure you know your way around your disk sector editor and that you work only on a backup of your saved game.)

OLD GAMES

The best way of finding out about old games is to invest in *The Cheater's Digest*. At just £4.99 and with over 5,500 cheats included on the disk, this is a real bargain.

Cheques should be made payable to PjH Publishing and sent to: PjH Publishing, 4 Manor Close, Brampton, Huntingdon, Cambridgeshire, PE18 8UF.



We wanted to interview our intrepid monster-bashing hero, but unfortunately an alien beat us to it, devouring him in a single bite.

Alien Thing (*STF* 75, 68%), Daniel Richter of Velbert in Germany has the level codes you need...

Level	Code
2	PARTY
3	WORK
4	LARD
5	WHEEE
6	HELLO
7	HARD
8	GOSH
9	NIGHT
10	PEN
11	RULER.

More hot alien-splatting action.

Moon Speeder

Although there's no specific cheat for Merlin's Falcon-only racing game (*STF* 73, 79%), Giles Audoly, one of the team behind *Moon Speeder* and its sequel *Moon Games* has the following tips for frustrated lunar racers everywhere.

"I love playing with speeder six or seven on track two," begins Giles, "and on 'meli melo' with speeder six, but I would not advise those speeders for beginners." Giles favours speeder three over all five levels, although its relatively poor acceleration means you need to avoid hitting the barriers too often.

And there you have it. In the meantime, more information on *Moon Games* can be found in news, see page 11. *stf*

Moon Speeder scored 79% in issue 73 when it cost £45. Now you can get it from Merlin for just £29.99, and we'd recommend it to all Falcon owners.

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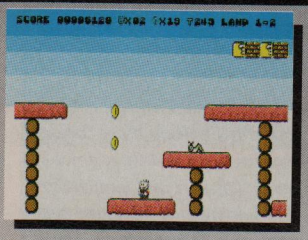

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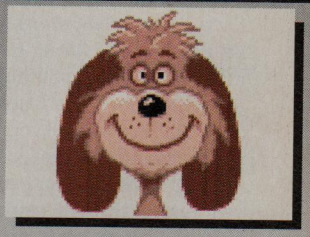

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NEXT MONTH

Exclusive: It's the one you've all been waiting for. Sam Tramiel, head of Atari Corporation, talks to *ST FORMAT* about the company's past, present and future. Why did you discontinue the ST and Falcon, Mr Tramiel?

Go natural

Buckle your seatbelt, flux your capacitor and come with us to a time of natural harmonies and soothing melodies. Yes, next issue we show you how to create natural-sounding music and richer, more organic tones, plus we give you the software to help you do it.

3D extra

Virtual adventures in cyberspace. We take a more detailed look into the animation and design of 3D objects. Plus: a preview of the English version of *Papyrus Gold*, and a review of *Ease 4*, the latest update of System Solutions' replacement desktop system.

ST FORMAT

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ON THE CARDS

If there's a feature you'd like to see in a coming issue of *ST FORMAT*, please write to: On the Cards, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW and we'll do our best to fit it in.

- Programming games and applications
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THE NEW VIDEOMASTER

Paul Jenkinson from Blackpool is the lucky winner of HiSoft's VideoMaster digitiser and RGB ColourMaster splitter, so expect something really special when you visit next year's illuminations. Oh, and by the way, Andy's surname is actually spelt 'Ounsted' – something which tripped up many of you! Not that we like Andy any more – he left us.

marvellous it was verging on the philanthropic, which more than compensated for its unpredictable speed. Now, however, I've had an order, and a much later separate request for a catalogue, outstanding for several months, and I'm beginning to fear the worst. Can you throw any light on Ad.Lib's current status for me?
P Rex, Dunstable

stf: *Unfortunately, Ad.Lib recently decided to take on the wrath of nature, in the shape of huge lightning bolt. Not surprisingly, the lightning bolt came off best, and Ad.Lib lost most of its files when the power surge wiped out the hard drive. As a result, Andy Curtis, who runs Ad.Lib, has decided to scale down the library and now only offers programs featured in* ST FORMAT *that you can't get elsewhere.*

Print-shy results

When are we going to hear the results of all the recent competitions? It gets a tad frustrating scanning through the pages for winners each month and not finding any. Are they heaped away in a quiet corner of the office? Piles of print-shy entry forms?

Now for a total change of tack: can anyone tell me if there are any shops near me that upgrade STs for a reasonable price? Or ST owners wanting to swap stuff?
John Thompson, Darlington

stf: *Oops, sorry about that. We've just checked the office, and cowering in the corner were hundreds of entry forms simply desperate to escape being singled out for printing. Or maybe it's the coke Nick spilt on them that's making them all stick together. Anyway, if you cast your eye about these very pages you'll find some of the less sticky winners.*

As for repair shops in Darlington, no, we don't know of any personally. Anyone else? What else? Oh, yeah – people to swap stuff? Hang on, don't we have a reader ads section for this sort of thing? Clear off to page 66 where you belong. Sheesh!

Absolute beginners

I'd love to see an issue devoted purely to beginners (like issue 31). Even though the ST is no longer selling in huge quantities, I've seen many Ataris for sale secondhand, and I feel this sort of feature would be invaluable to many people who are new to the ST.

Second, and finally as it turns out, I recently got a new PC and have been having great fun with the PD *Ghostlink* utility. In comparison, however, I feel the ST's operating system is far easier to use than the PC's cumbersome *Windows/DOS* environment. I don't like having to muck about with CONFIG.SYS or AUTOEXEC.BAT files every time I play a new game. Maybe I just haven't got the hang of it yet, but I'm glad I have still have my trusty ST.
Neil Davidson, via e-mail

stf: *Hmm, an article for beginners, eh? We've considered doing a feature like this for some time, but to be honest, we weren't sure if the numbers of ST newcomers warranted it. What do you think? Would it be a waste of space? Or are you one of these newcomers? And if so, which areas of the ST don't you understand?*

Send your letters to the editor, Karen Levell, at: Feedback, *ST FORMAT*, Future Publishing, 30 Monmouth St, Bath, Avon, BA1 2BW or e-mail: klevell@futurenet.co.uk. You can also reach her via our Web site at: http://www.futurenet.co.uk. Note: letters may be edited for length and clarity.

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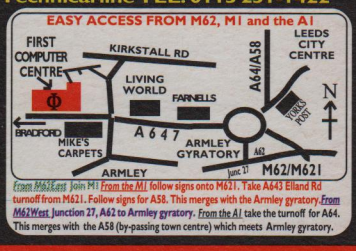

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14,000 Data + 14,400 Fax

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- Up to 57,600bps (v42bis)
- Silent & Adaptive Answer
- DOS & Win Fax Software
- Class 1 & 2 Fax Only
- Unique LCD Display
- 5 Year Warranty

Excellent performance - this modem should be on everyone's shortlist - C. Shopper - April 94

£134.99

Straight Fax 2.1 £69.95 Fax software for Atari

NEW!!NEW!!NEW!!NEW!!NEW!!NEW!!NEW!!

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Low cost V34 modem

- Up to 28,800bps data
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- LED display

Maximum Speed at an affordable price!!

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US Robotics® Preferred Resellers

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- V34 Standard
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Now 33,600bps!

Dual Standard V34+ Fax

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- 5 Year Warranty
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Guaranteed lowest prices

£49.99

- It's QUICKER than a mouse
- More ACCURATE than a mouse
- More "NATURAL" than a mouse
- It SAVES TIME
- It's EASIER to use

Steinberg

Cubase Lite
16 track, score printing £74.99

Cubase Score V.2
Pro 128 track sequencer £344.99

Cubase Audio Falcon
Integrated Digital Audio/Midi/Scoreprinting V2 £614.99

Full range of products available
The First Computer Centre is a fully authorised Steinberg dealer, providing only full spec. UK software/hardware. Educational discounts available.

Drives/Mice/Trackballs

Power 720B 3.5" Drive £69.99
This 1 meg external drive comes with Virus checker, built in Blitz turbo and boot switch for drive B, Incl PSU

Zydec 3.5" Drive £59.99
1 meg ext. drive, high quality low noise, Includes PSU

Atari Int. Drive (original) £49.99
1 meg replacement internal disk drive for ST/FM/E, direct replacement, no case modification required.

Mega Mouse 400dpi £11.49

Essentialmouse 400 dpi £10.99

Zydec Trackball £29.99

Alfa Trackball £34.99

Video/Genlocks

HAMA TRI-LOCK £340.99
NTSC/PAL COMPATIBLE
CALL FOR DETAILS.

VIDI ST(12)
As official dealers for ROMBO, we are able to offer this excellent product at great price. VIDI ST (12) recognised as the famous Complete Colour System at a higher specification but a lower price.

£69.99

Peripherals

The Zy-Fi Stereo System only £26.99
This is a powerful speaker system with built in stereo amplifier. It will plug into an Atari STE, Commodore Amiga or Acorn Archimedes. Complete with its own power supply the Zy-Fi system can also be powered by batteries

The Zy-Fi Pro Stereo System only £57.99
Higher specification version of above

Forget-me-Clock 2 only £19.99
Real time clock that plugs into cartridge port. Software for setting time & date. 2 year guarantee.

ROBOSHIFT MK-I £9.99
Automatic Mouse/Joystick switcher

CD Rom/Hard drives

aiwa ACD-300

- Large LCD operation panel
- SCSI-2 interface
- 300k/sec data transfer, 275ms access time
- Audio CD dedicated operation buttons

ONLY £165.99

PRIMA ST-Combo
260Mb Hard Drive and Dual Speed CD-ROM £434.99

Bare SCSI drives

540Mb	£177.99
1.0 Gig.	£264.99
2.0 Gig.	£609.99
4.0 Gig.	£999.99

For larger drives please call.

NEW!! NEW!!NEW!!NEW!!NEW!!

iomega Zip drive

- 1 x 100Mb cartridge included

£189.99

SCSI controller required

New

PRIMA

The PRIMA range come with a built in disk cache as standard that can reduce disk accessing time by 50%. Standard warranty 1 year.

STe/Falcon Hard drives

PRIMA 540	£199.99
PRIMA 1Gig	£299.99
PRIMA 2Gig	£599.99
PRIMA 4Gig	£1059.99

Prices exclude SCSI controllerand connecting cables.

ICD Link II SCSI controller NOW!! only £74.99

Printers

All our printers come with ribbon or toner, paper & cables!!

Canon

Canon BJ30	£184.99
Compact Portable Printer, 30 page ASF in built.	
Canon BJ200ex	£207.99
High quality mono output, up to 4 P/P/M. ASF in built.	
Canon BJC70Col.	£289.99
High quality Portable Colour Printer, 30 page ASF.	
Canon BJC4000 Col.	£289.99
High quality Colour, Super fast mono printing, 360 dpi	
Canon BJC600e	£412.99
Dedicated Col. printer,New enhanced version, 720dpi	

EPSON

New! Epson Stylus Pro	£504.99
Piezo Ink technology 720 x 720 dpi, A4 printing.	
New! Epson Stylus Col. II	£335.99
720 dpi, 4ppm Black, 2ppm Colour, 100 sheet ASF.	
New! Epson Stylus Col. IIs	£270.99
720 dpi, 2.5ppm Black, 1ppm Colour, 100 sheet ASF.	
New! Epson Stylus 820	£234.99
720 dpi, Mono but Colour upgradeable, 100 sheet ASF.	
Epson Stylus Colour	£364.99
720 dpi, Colour and Mono printing, ASF in built.	

CITIZEN

ABC Colour printer	£145.99
simple (as easy as ABC) to use 24 pin printer. Comes as standard with 50 sheet auto sheet feeder. Tractor feed optional at £37.99	
Projet IIc Colour	£239.99
New inkjet printer with built in auto sheet feeder.	

star

Star LC90 9 pin mono	£107.99
Star LC100 9 pin colour	£129.99
Star LC240 24 pin mono	£123.99
Star LC240C 24 pin colour	£145.99
Tractor Feed for the new range	£15.99
Star SJ144 Colour	£229.99

HEWLETT® PACKARD

NEW! HP600 mono	£242.99
HP600 Colour upgrade £41.99	
NEW! HP660 Colour	£319.99

All HP printers come with a 3 year warranty

Accessories

Modem/null modem cables	£9.99
ST - HI RES monitor cable	£9.99
Power cable	£4.99
Twin Joystick/Mouse Ext. cable	£4.99
Mouse/Joystick splitter cable	£4.99
STE/FM scart cable	£9.99
Falcon VGA adaptor	£9.99
Quality Mouse Mats	£3.99
STD 1.8MTR printer lead	£4.99
STFM/STE Power Supplies	£39.99
STE or STFM Case now only	£4.99
Keyboard Membrane Covers	£14.95
14" Monitor cover	£6.99
Atari 520/1040 dust cover	£3.99

Parallel port sharers

2 Way	£12.99
3 Way	£18.99
4 Way	£21.99

Price includes connecting cable

Monitor Switcher Box £17.99
Switches between mono & colour monitors, such as Prima Mono Monitor & 8833 MK2

Memory

1 Mb 72 Pin SIMM	£29.99
2 Mb 72 Pin SIMM	£69.99
4 Mb 72 Pin SIMM	£115.99
8 Mb 72 Pin SIMM	£230.99
16 Mb 72 pin SIMM	£399.99
1 Mb 30 pin SIMM	£29.99
4 Mb 30 pin SIMM	£115.99
256 by 4 DRAM (DILs)	(each)£6.99
1 Mb by 4 ZIPS(1/2 Mb)	£32.99
256 by 4 ZIPS	(each)£5.99

Part Ex. available on your old memory, Call for pricing.

Marpet

STFM *Deluxe* SIMMS modules

4 Mb unpopulated	£24.99
4 Mb populated to 512k	£34.99
4 Mb populated to 2 Mb	£74.99
4 Mb populated to 4 Mb	£114.99

Marpet products come with a 12 month warranty.

***Prima* RAM expansion**

512K STe	£9.99
2 Mb STe	£49.99
4 Mb STe	£94.99
14 Mb unpop. for the Falcon	£49.99

The Falcon board uses 72 pin SIMM modules, so just add the cost of the SIMMS to get your populated price.
Prima products come with a 2 year guarantee

Monitors

PRIMA AM1448 Hi-Res MonoMonitor

High resolution 14" mono monitor. 640 x 400 resolution. Stable image and razor sharp quality. Comes with built in tilt & swivel monitor stand.

£99.99!

Microvitec 1438 Multi-Sync

The Auto-Scan is a 14", .28dp, MPR II compliant monitor. STE/FM,Falcon, Amiga and PC compatible. Ideal for both business and games use.

only £274.99

New low prices

Colour monitor 14" SVGA £192.99!!

MPR II, .28 dot pitch, Non-interlaced monitor, Falcon and PC compatible.

All our monitors are UK spec. All monitors come complete with connecting leads.

Consumables

Cartridges

Canon BJ10sx/SJ48 cart.	£19.99
Canon BJ200/200ex mono cart.	£19.99
Canon BJ30 mono ink tank	£14.49
Canon BJC70 col. ink tank	£19.49
Canon BJC70 mono ink tank	£12.49
Canon BJC4000 col. ink tank	£19.99
Canon BJC4000 mono ink tank	£8.99
Canon BJC600e col. ink tank	£8.99
Canon BJC 600e mono ink tank	£6.99
HP520/540 D/life mono cart.	£24.99
HP550/560/660 col.cart.	£26.99
Star SJ144 mono or colour	£7.99
Epson Stylus ColourII/s/820 mono	£17.99
Epson Stylus ColourII/s/820 colour	£24.99

PREMIER Ink Refills
save a fortune in running costs with your ink/bubble jet. Compatible with HP, Canon, Star,Citizen & many others.

Single refills (22ml)	£6.99
Twin refills (44ml)	£12.99
Three colour kit (66ml)	£19.99
Full colour kit (88ml)	£27.99

RIBBONS

Citizen Swift/ABC mono	£4.99
Citizen Swift/ABC Colour	£13.99
Star LC90 mono	£4.99
Star LC10/20/100 mono	£3.69
Star LC10/20/100 colour	£7.99
Star LC240C mono	£8.49
Star LC240C colour	£13.99
Star LC240 mono	£5.99
Star LC24-200/300 Colour	£11.99
Re-Ink Spray for mono rib.	£11.99

Disks/Boxes

LOW Prices LOW

Qty	Bulk DD	Branded DD
10	£3.49	£4.49
30	£9.99	£12.99
50	£15.99	£18.99
100	£29.99	£35.99
200	£52.99	£63.99
500	£118.99	£142.99
1000	£211.49	£253.99

All disks are guaranteed. All branded disks come with labels

Disk labels 500	£6.99
Disk labels 1000	£9.99
10 Capacity Box	£0.99
50 Capacity Lockable Box	£3.99
100 Capacity Lockable Box	£5.49
*90 Capacity Banx Box	£10.99
*150 Capacity Posso Box	£20.99

*add £3.00 delivery if purchasing just one Posso or Banx box. Normal delivery when purchased with other product or when buying 2 or more.

Software

MUSIC/SOUND

Replay 16 Digitiser	£109.99
Stereo Master	£34.99

UTILITIES/PROGRAMMING

Diamond back 3 backup utils.	£44.99
Multi Tos	£44.99
Speedogdos	£34.99
ST Straight Fax 2.1	£72.99
ST Basic	£5.99

VIDEO AND GRAPHICS

Flexi Dump II	£38.99
True Paint	£34.99
Video Master	£59.99
Video Master (falcon only)	£79.99

WORD PROCESSING & DTP

Calamus 1.09n	£59.99
Papyrus Gold	£109.99

Scanners

The Power Scanner only £99.99
This scanner comes with the latest version of software.

Alpha Scan Plus only £139.99
New version of this famous 400 DPI scanner. Includes Touch up, Merge-it and OCR software enabling you to alter and manipulate high resolution images. Needs 1 Mb of RAM and runs in mono only, HD required to use OCR software.

On this month's...

GUARANTEED OF QUALITY
TESTED FOR MAXIMUM COMPATIBILITY WITH STS AND FALCONS, AND GUARANTEED VIRUS-FREE

COVER DISK

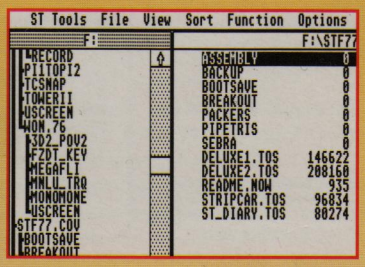
7 GREAT PROGRAMS

PLUS BACK UP UTILITY

KILLING TIME

Blast your way through time in this exciting arcade game for all colour Ataris. TOS 2.06 and Falcon users need to use *STOSFix*.

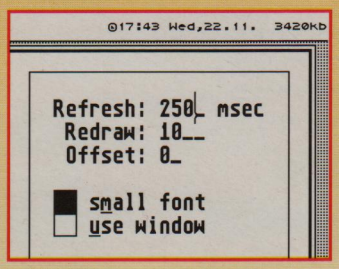
ST TOOLS

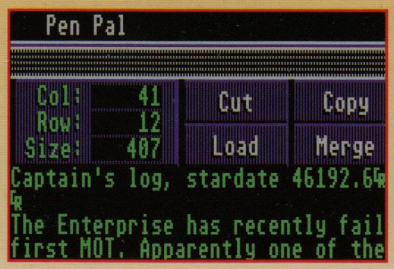


Scan, edit, repair and optimise your files, disks and hard drive with this powerful disk utility for all Ataris. 1MByte

MENUINFO

Display all kinds of system information on your desktop with this configurable utility for all Ataris.



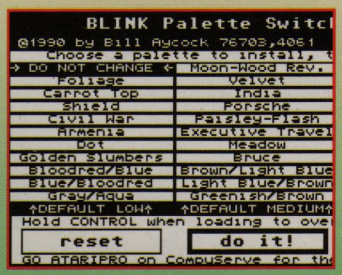


PEN PAL

A fast and powerful text editor for creating ASCII documents.

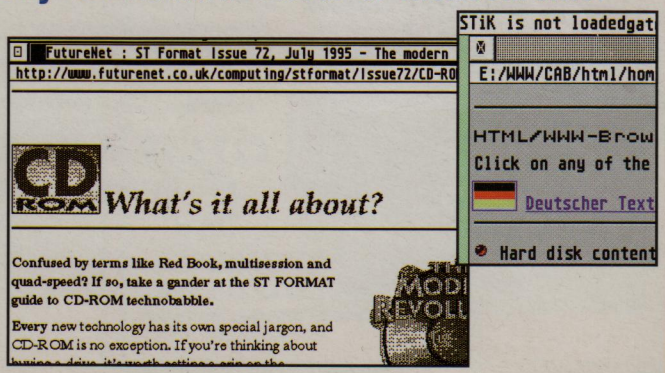
BLINK

Brighten up your desktop with this set of utilities for switching system palettes. All Ataris.



WWW ACCESS PACK

CAB (formerly *HTML Browser*), *STiK* and the interface overlay – all the software you need to get onto the Internet with any 512K Atari. Colour or monochrome.



GOOFFY

Print out ASCII documents in the background while you get on with other GEM applications. All Ataris.

DSP FILES

Discover the potential of your Falcon's DSP chip with this set of utilities and example files to accompany our DSP tutorial.